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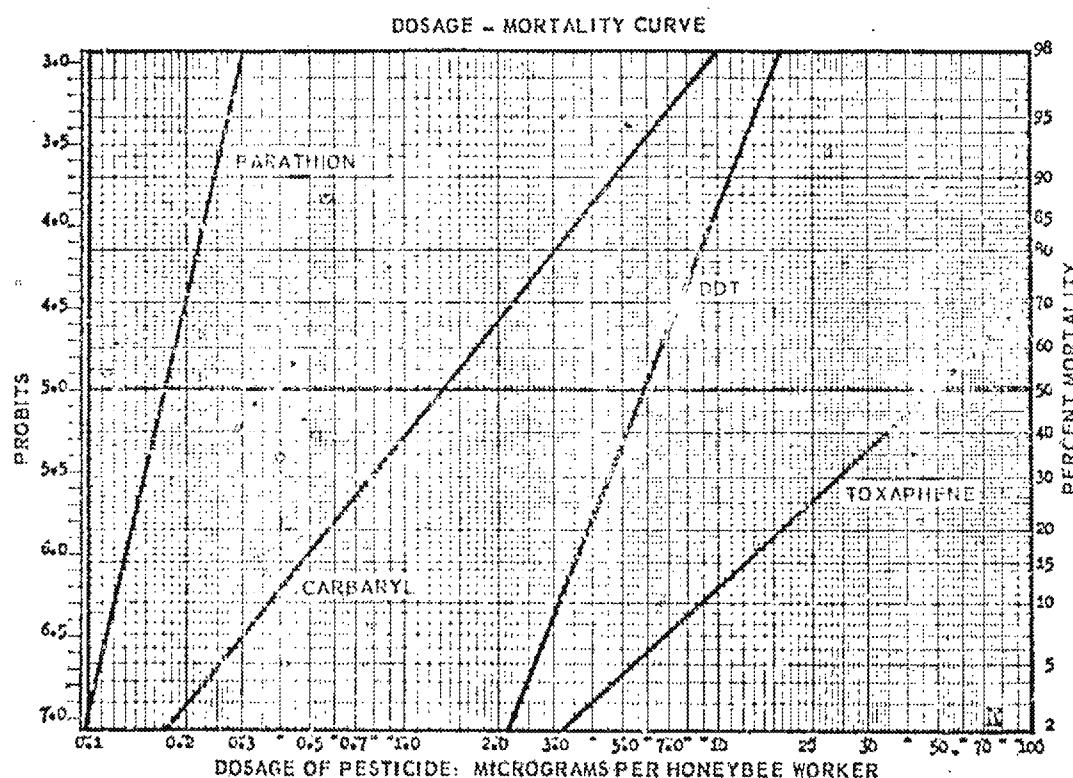
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TOXICITY OF PESTICIDES AND OTHER AGRICULTURAL CHEMICALS TO HONEY BEES

Laboratory Studies



Division of Agricultural Sciences
UNIVERSITY OF CALIFORNIA

PRINTED DECEMBER 1975

LEAFLET
2287

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ACKNOWLEDGMENT

The authors acknowledge the able assistance and cooperation of many people from these organizations: Agricultural Chemical Industries, California Beekeeping groups, California State Department of Agriculture, and various University of California Entomology staff members.

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Formerly publication HbI-16

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TOXICITY OF PESTICIDES AND OTHER AGRICULTURAL CHEMICALS TO HONEY BEES

Laboratory Studies

The California beekeeping industry of 559,000 colonies produces an annual income of \$7.5 to 11,000,000 with an investment of approximately \$15,000,000 and leads all other states in three phases of beekeeping. These divisions are: queen and package bee production, honey and beeswax production and supervised pollination of agriculture crops (Atkins, 1972). Honey bees are used annually to pollinate crops in California valued at \$300,000,000. For over 30 years this important industry has sustained serious losses from agricultural pesticide applications. With recent introductions of new pesticides to replace the use of DDT, this loss has been as high as 96,000 colonies in a single year (Foote, 1970).

Because of the importance of these losses, comparative studies on the toxicity of pesticides to honey bees, Apis mellifera L., were begun in 1950 at the University of California at Riverside. Laboratory studies have been in progress since then. Field studies have been continuous since 1952 and have been reported separately by Anderson *et al.* (AXT-251, 1971) and Atkins *et al.* (OSA #170, 1972). This is a report of the laboratory studies.

For convenience the word "pesticide" is used here to mean all agricultural chemicals used in farming and ranching operations-- acaricides, antibiotics, chemosterilants, desiccants, defoliants, fungicides, herbicides, insecticides, insect growth regulators, molluscicides, nematicides, and plant growth regulators, etc.

These chemicals are applied in many forms. The most important ones are baits, dips, dusts, fumigants, granules, side dressings, and sprays. Smog effects on honey bees are also tested.

The study of pesticide effect on honey bees is vital because agriculture must have pesticides to control most agricultural pests; it also requires honey bees for pollinating 50 of the 150 crops grown in California to produce commercial quantities of seeds and fruits. Since this is so, agriculture must learn how to use pesticides so that pests are controlled and beneficial insects survive.

The ideal pesticide is selectively nontoxic to honey bees while it is controlling a specific pest. Since it is seldom possible to develop a product wholly meeting the ideal, the best compromise must be looked for. To find this, the relative toxicities of various pesticide chemicals to honey bees have been comparatively investigated.

Laboratory examinations and field examinations must both be conducted separately if the toxic effect of each pesticide on honey bees is to be discovered. To learn how to apply a pesticide to the best advantage, detailed qualitative and quantitative study

of its effect is necessary. This can best be done under the controlled conditions of the laboratory.

The laboratory technique primarily measures the pesticide's contact effect, although internal effects of stomach poisons and fumigants are measured by modifications of the same technique, or with other techniques like mass feeding of poisoned food. The dusting method used is efficient in finding the qualitative and quantitative contact effect in the laboratory. The dusts are uniformly prepared with pyrolite as the common diluent. Pyrolite is nontoxic to bees. Dusts are prepared by blending the technical chemical, dust preparations, wettable powders, or emulsifiable liquid concentrates with the diluent. These prepared dusts usually store for fairly lengthy periods without the deterioration or hydrolyzation that is often a disadvantage of liquid preparations. Dusts also have the advantage that the chemical does not separate from the diluent.

A bell-jar vacuum duster for use in pesticide tests was described by Farrar et al (1948). Richards and Murphy (1949) used similar equipment for fungicide tests on bean plants. McCallan (1950) made a thorough study of factors influencing deposition in the bell-jar duster. In their studies, Anderson and Tuft (1952), and Tuft and Anderson (1953) used the bell-jar duster for dusting flowering Lippia lanceolata plants, honey bees, and tomato plants. Atkins et al (1954) described the bell-jar duster and the technique used in laboratory evaluation of pesticide dusts in toxicological

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studies with honey bees. The bell-jar duster and the technique have been modified many times. The present duster is operated automatically and electrically to eliminate variation that might be caused by different operators. Otherwise the screening test method is about the same as Atkins *et al* described it in 1954: dosages of dust are weighed; bees are aspirated (sucked) into dusting cages; bees are treated; and treated bees are transferred into holding cages at the rate of 1 unit per minute using a crew of three technicians.

The laboratory testing procedures and technique are as follows. Worker bees of uniform age are obtained from a colony before treatment. The bees are aspirated from the stock-bee cage into dusting cages before feeding. The dusting cage is 3 inches (7.5 cm) in diameter by 6 inches (15.2 cm) high and made with 14-mesh wire (5.6-mesh/cm) screen. The dusting cage with the bees is placed in the dusting equipment. A watch glass containing 200 mg of pesticide dust is placed in the duster and the air exhausted to a vacuum of 18 inches of mercury (931 mm Hg). Outside air imploding onto the dust sample replaces the vacuum and uniformly disperses the pesticide onto the caged bees. The dusted bees are removed from the equipment and transferred through a funnel into clean 5- by 5- by 5-inch (12.7x12.7x12.7 cm) holding cages of 8-mesh/inch (3.2-mesh/cm) hardware cloth. Each holding cage holds a 14-milliliter vial containing a 50-percent honey-water solution. The treated bees are kept in a constant temperature room at 80 F (26.7C) and 65-percent relative humidity. Observations

are recorded at 24, 48, 72, and 96 hours. Each pesticide is evaluated using a series of dust dosages. For this evaluation, 3 replicates of 25 bees each are used at each dosage level. This dosage series is repeated three times using bees from a different colony each time, making 9 replicates for each material at each dosage level.

Until 1961, laboratory comparative data were determined and reported based on field dosages commonly used for pest control in California agricultural crops. In 1961, the laboratory testing system was changed to one that determines dosage-mortality curves to obtain lethal concentration (LC_{50})^{*} values. In 1963, the quantity of a dust composed of pyralite diluent and 1 percent Sudan III deposited on honey bees in the vacuum bell-jar duster was measured with a Beckman DU Spectrophotometer. This research indicated that a dosage of 100 mg of dust mixture in the vacuum bell-jar duster deposited 61.66 ± 14.0 μg of material per bee; a 200-mg dosage deposited 120.86 ± 40.5 μg per bee; and, a 400-mg dosage deposited 240.33 ± 28.7 μg per bee. This technique was devised by technicians under the guidance of Doctors R. L. Metcalf and T. R. Fukuto. The results of this study enable us to find the lethal dosage (LD_{50})^{*} values of pesticides in micrograms of chemical per bee from either dosage-mortality curves or from LC_{50} values. The slope value is also obtained from the dosage-mortality curve. With the LD_{50} and slope values, anyone may reconstruct the dosage-mortality curve to obtain other LD values. The dosage-mortality

curve provides the contact poison effect. The time-mortality curve provides the stomach poison effect for those pesticides having this mode of action.

Using this equipment and technique, 22,000 cages of bees have been treated during the last 22 years to test approximately 500 pesticides. This includes an additional 100 dust diluents that have been tested through the years which are not included in these data.

Through experience and observations of field applications and field tests we have found that a useful rule of thumb way of determining the anticipated toxicity hazard of a pesticide to honey bees in the field is available by utilizing the laboratory data presented herein. In most instances the LD₅₀ value of a pesticide in micrograms per bee can be directly converted to the equivalent number of pounds of chemical per acre when applied as a spray or dust to the aerial portions of plants ($\mu\text{g}/\text{bee} \times 1.12$ is equivalent to the no. of kg/hectare).

Remember that the LD₅₀ value is the amount of a pesticide which will kill 50% of the bees contacted. Then, for example, since the LD₅₀ of parathion is 0.175 $\mu\text{g}/\text{bee}$ we would expect that 0.17 lb/acre of parathion would kill 50% of the bees foraging in a treated field crop at the time of treatment or shortly afterwards (Atkins, 1971).

The slope value of a pesticide may also be utilized as an effective index to determine the anticipated increase or decrease of honey bee toxicity in relation to the LD₅₀ value. Generally

speaking, a pesticide with a slope value of 4 probits or higher can often be made safer to honey bees by lowering the dosage only slightly. Conversely, by increasing the dosage only slightly the pesticide can become highly hazardous to bees. This information is particularly useful when the LD₅₀ in µg/bee is approximately equal to the normal dosage in lbs/A needed in the field to control pest populations. For example, consider a pesticide, which is normally applied at dosages of 0.5 to 1.5 lbs/A to control pest insects, having a LD₅₀ of 1.0 µg/bee. Furthermore, suppose that the slope value of this pesticide is 2.0 probits. Then, if this chemical is applied at 0.5 lb/A, we would expect a 28% kill of bees in the field; at 1 lb/A, we would expect a 50% kill; and, at 1.5 lbs/A, we would expect a 64% kill.

For additional examples of anticipated bee mortalities at other selected slope values and field dosages of a pesticide having a LD₅₀ value of 1.0 µg/bee refer to table below.

Slope value, probits	If pesticide is applied at the rate of x pounds per acre--then the anticipated percent mortality is:				
	0.5	0.75	1.0	1.25	1.5
2	28	42	50	57	64
4	12	32	50	66	72
8	< 2	17	50	78	96
16	--	3	50	93	--

Any pesticide having a known LD₅₀ value can be similarly perused substituting the LD₅₀ value of the chemical into the LD₅₀ (or 1.0 or center) column of this figure and multiplying the LD₅₀ value

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by the other factors (0.5, 0.75, 1.25 and 1.5) to obtain the proper range of field dosages in pounds per acre. Then, using the slope value closest to the known slope value for the particular pesticide, the anticipated percent mortalities will be valid for that chemical.

We wish to emphasize that there are a few exceptions to the above rule of thumb method--those pesticides which are less hazardous as well as more hazardous than one can anticipate from the laboratory data.

It is our desire that, by presenting this data and these methods, decisions can be made (to select a pesticide, determine the dosage, and apply the chemical in the safest way and at the most appropriate time of day) maximizing the control of pest species while minimizing the adverse effects upon beneficial species in the treated area.

A list of the LD₅₀ and slope values determined at 48 hours after treatment at 80F (26.7C) and 65 percent relative humidity in the laboratory is given for 203 pesticides in table 1. A list of pesticides not toxic in the laboratory at dosages below 11 µg per honey bee is given for 196 pesticides in table 2. Other commonly used pesticide names or name designations appear together in tables 1 and 2. The pesticide names or other designations appearing in table 1 or 2 are arranged in alphabetical order in table 3 preceded with a numerical reference to their position in table 1 or 2 and giving the chemical definition.

*LC₅₀ is the lethal concentration of a chemical giving a bee mortality of 50 percent; LD₅₀ is the lethal dosage in micrograms per bee of a chemical giving 50 percent mortality.

TABLE I. LD₅₀ and Slope Values Showing the Comparative Toxicity to Honey Bees In the Laboratory at 68 Hours at 80°F (26.7°C) and 65-Percent Relative Humidity.

Reference No.	Pesticide	LD ₅₀ in μg/Bee	Slope Value
Group I - Highly Toxic to Honey Bees			
1	tepp	0.001	0.64
2	thiamazin; Zinophos®; Hemaphos®, AC-18113; ENT 25580	0.042	9.03
3	chlorpyrifos; Durban®, Dowco 179	0.114	7.80
4	dicofol	0.139	6.65
5	carbofuran; Furadan®; WIA-10242; ENT 27164	0.160	4.31
6	parathion	0.175	7.66
7	OC-6306	0.178	8.19
8	Himanthoate; Cygon®; DE-FEND®; ENT 24650	/	6.188
9	methidathion; Supracide®; GS-13005; ENT 27197	0.236	9.05
10	EPN; EPV-300	0.245	5.08
11	HOE-2960; ENT 27764	0.268	9.39
12	C-2307; ENT 27625	0.283	6.11
13	alidicarb; Temik®; UC-21149; ENT 27893	0.285	5.64
14	methyl parathion	0.291	6.24
15	diclofop; Bidrin®; SP-3562; ENT 24462	0.300	16.50
16	phoxim; Valoxon®; Mythomyl®; BAY-27486; ENT 27448	0.305	6.80
17	phenothiazine; CIBAAL®; Penthion®; BAY-33051; ENT 27386	0.306	4.95
18	fenthion; Baytex®; BAY-29493; ENT 25540	0.308	7.20
19	Zectran®; Dowco 1393; ENT 23766; maxicarbamate	0.308	4.92
20	monocrotophos; Azodrin®; SD-9129; ENT 27129	0.250	7.77
21	fensulfotion; Basant®; BAY-25141; ENT 24945	0.250	5.46
22	aldrin	0.353	4.98
23	metophos; Phosdrin®; OG-3046; ENT 22374	0.360	7.95
24	disulfoton; DIAZINON®; G-24480	0.372	8.97
25	Mesurol®; BAY-9026; BAY-37344; ENT 25726	0.375	3.20
26	Methyl Bursban; Dowco 214	0.383	10.23
27	fentriothion; Accothion®; Felithion®; Sumithion®; BAY-41831; CP-47116; ENT 25715	0.383	4.94
28	NIA-10586	0.408	4.26
29	Famphur; Famophos®; GL-38823	0.417	4.85
30	Noban®; NC-A-600; ENT 27001	0.423	8.69
31	azephosmethyli; Guthion®; BAY-47147	0.424	6.84
32	Isolan®; G-23611	0.471	8.70
33	naled; Dis bem®; RE-4355	0.480	18.18

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34	dichlorvos; Vapona [®] ; DDVP	0.495	9.97	59	Ortho [®] ; Ortho 12420; ENT 27822	1.20	8.26
35	BAY-93820; ENT 27659	0.519	12.80	60	capt. ryl; Sevin [®] ; Compd. 7744	1.34	2.45
36	heptachlor; Velstoneol 104C; septamol [®] ; Mterex [®] ; H-34	0.526	5.16	61	Sevin 80S	1.34	4.22
37	GS-12968	0.550	8.91	62	Proponix; aprocarb; Baygon [®] ; Unden [®] ; BA-39007; ONS-33; ENT 25671	1.35	3.30
38	Lindane; gamma-BHC	0.562	5.07	63	monitor; Tamron [®] ; BAY-71628; RE-5006	1.37	10.32
39	Hercules 13326	0.576	8.40	64	Gardena [®] ; Robon [®] ; SD-86447	1.37	21.45
40	Hercules 12413; ENT 27615	0.581	3.90	65	AC-12008	1.38	3.60
41	NA-11337	0.609	3.53	66	phosphamidon; Dimexon [®]	1.46	14.28
42	pririmipos-ethyl; RP-211	0.614	15.11	67	Methyl Trieth. an [®]	1.46	6.64
43	NI-11359	0.624	4.50	68	C-8674; ENT 27409	1.46	3.93
44	UC-2305	0.628	2.68	69	Iso-Systox	1.49	1.45
45	pririmipos-methyl; RP-511	0.639	13.89	70	methoxy1; Laminate [®] ; IN-1179; Nutrid [®]	1.51	3.03
46	unlabelled; Cythion [®]	0.709	8.04	71	Abate [®] ; Biothion [®] ; AC-52160; EI-52160; ENT 27165	1.55	2.85
47	Bonyl [®] ; GC-3707	0.753	3.09	72	Isodrin; Compd. 711	1.61	2.63
48	Hercules 13462; ENT 27405	0.829	3.90	73	EN-6624; ENT 27760	1.66	16.86
49	UC-30045; E.R. 27333	0.880	4.02	74	BUC [®] ; Ortho 5353; RE-5353; ENT 27127	1.66	5.12
50	Hercules 5727; UC-10854	0.937	4.36	75	Hercules 9907; ENT 27334	1.66	3.30
51	Methyl 1,3- <i>o</i> -strox	0.937	3.48	76	Dow RT-15	1.63	6.12
52	aciphosethyl; Ethyl Guthion [®] ; BAY-16559; ENT 22014	0.981	7.32	77	Nemacur P [®] ; BAY-68138	1.67	5.25
53	Sevin 4-011	1.02	4.37	78	Sevin [®] 4	1.88	3.82
54	C-9473; ENT 27564	1.04	8.76	79	R-1662	1.90	3.02
55	Unidan [®] ; Prolate [®] ; R-1504	1.06	4.77				
56	RP-11783	1.08	7.11				
57	Carbam.Ic [®] ; promecarb; Schering 34615; EP-316; SK-316	1.13	2.22				
58	Natrac [®] ; BAY-46646; ENT 25784	1.16	3.72				

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Group III - Generally Toxic to Human Skin

60	Cinerin; Cenyd; 269	2.04	102	RAY-35911; ENT 25635	3.75	3.68
61	AE-5030	2.03	103	CE-1028	2.84	6.21
62	Isophospho; Akar [®] ; Phosvel [®] ; VCS-506;	2.03	104	TC-6812	3.96	3.70
63	ENT 27378	2.18	105	Safodolphos; Alfacon [®] ; C-9491;		
64	Fluoron; Succinarb; C-8353	2.21	106	ENT 27454	4.09	3.98
65	Hercules 3896 G	2.25	107	CE-16284	4.15	3.21
66	Cidarin [®] ; SH-4294; eroxephos	2.26	108	Cyolutek [®] ; ET-47031	4.23	7.32
67	AC-12809	2.26	109	TH-75	4.29	5.64
68	tricloroxate; Agritox [®] ; RAY-37289;	2.26	110	carbofenthion; Triton [®] ; H-1303	4.47	8.39
69	ENT 55712	2.33	111	Perthane [®] ; Q-137	4.47	4.05
70	38601; SOK [®] ; U-12927; carbenclate	2.36	112	GC-953	4.90	4.14
71	X-4543	2.48	113	EP-7438	5.08	6.09
72	Ortho 11775; PP-9; RE-11	2.51	114	Nisoch [®] ; MSEA	5.24	3.87
73	demeton; Systox [®] ; RAY-5169	2.60	115	disulfoton; Di-Systof [®] ; RAY-19639	5.14	1.14
74	RAY-43064	2.62	116	chlordane	5.23	3.24
75	AKTON [®] ; SD-9098	2.65	117	UC-270745; UC-34026; ENT 27473	5.35	2.75
76	G-32494	2.70	118	RDT, 2,2' isomer	5.36	4.43
77	Pyramat [®] ; G-23530	2.95	119	SM-8448	5.74	8.72
78	oxydacetethyl; Meto Systox-R [®]	2.95	120	tromol; Herlan [®] ; Trolene [®] ; Dow RT-14;		
79	RAY-21097	3.00	121	Dow ET-37	5.34	2.10
80	C-10015; ENT 27410	3.14	122	Sanonite [®] ; U-27415; ENT 27646	5.35	4.13
81	chlordane, & visomers; HCS-3260	3.14	123	CE-10101	5.78	8.58
82	Cyrolane [®] ; ET-47720	3.31	124	dimefutan; Dimetilan [®] ; GS-13332	5.84	4.08
83	TC-72	3.38	125	SDT; ENT 1506	5.95	4.89
84	RAY-18156; ENT 27413	3.60	126	10Dipropyl Parathion; OXY-2168	6.41	6.86
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				Group IIX - Relatively Nontoxic to Honey Bees
126	Fluoxastrol; fenoflatoxole; levovazole; MC-5016; ENT 27446;	7.10	\$12	
127	DIC	7.12	4.63	139: CIB-10502
128	zinex; GC-1283	7.15	3.23	140: methazone; Saphos [®] ; EP-175
129	SP-9216	7.74	3.57	141: bifungeryl; Morocide [®] ; NIA-9044
130	endosulfan (ex. WPS); Thiodan [®] endofection; MC-5767; AC-19137	7.81	3.15	142: SP-1750
131	transid; MC-20547A; ENT 25562;	8.00	7.02	143: sabadilla
132	chlor dane	8.10	3.27	144: formetanate; Garzol SP [®] ; EP-332;
133	flusilane	8.50	2.34	145: ENT 27556
134	musalone; Zolare [®] ; RP-11974	8.94	3.83	146: CR-10216
135	PPG-1622	9.55	3.20	147: endosulfan (ex.tech.);
136	nitidite; Thimet [®] ; AC-3911	10.07	1.34	148: Fluorathyl; Lambrol [®] ; Mytrol [®] ;
137	Tydate; TN-1610	10.32	6.42	149: X-2060; TH-367-1
138	chlordecone; Kepone [®] ; Compd. 1189	10.39	4.83	150: α endosulfan
				151: Aeron [®] ; VPD
				152: primicarb; Pirimor [®] ; PP-062
				153: etion; MAlate [®]
				154: diazinon; Delnat [®] ; Hercules AC-52B;
				155: ENT 22897
				156: Endosulfan
				157: methoxychlor; Marlate [®] ; DMS
				158: Bandane [®]
				159: BAY-30731
				160: dinocap; Parathane [®] ; ENT 27727
				161: Torak [®] ; Mortules 14503; ENT 27320;
				162: diaffor
				163: dimesulf; Simon [®] DEF-DINE,
				164: alveolate salt

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160	Pictor®; Picco 713; ENT 21395; N-3180 38-39	4.92	182	meruron; CMH; Relexar®;	110	0.78
161	Dilad®; CS-203	40.49	1.70	Eraderex®; BAY-36686; chlorothalonat	121	1.14
162	R-23223	60.59	4.23	dicofol; Kelthane®; FW-293	145	1.52
163	Silox®; Zerlate®	46.65	2.12	Rhothane®; DD; TDE; ENT 4225	161	0.98
164	EP-334-UCI	46.75	1.98	SYLOID® 303-Grade 77; SG-77	163	2.65
165	dinobuton; Acrex®; DessoIn®;			Q-128	179	0.75
	UC-19786; ENT 21444	48.42	5.90	BAY-58720; ENT 27323	198	2.18
166	toxaphene	50.40	1.67	nitrofens; TCX®; FW-925	275	3.88
167	EP-417	51.46	3.18	propachlor; Hamrod®; CP-31393	312	2.81
168	ENT-618	52.82	3.46	Polyram®; ENT 26111	437	1.53
169	carbochlorfon; Dylox®; Dipotrex®;			fenscon; Nurisco®; TriFenson®;		
	ENT 19783	59.83	2.81	CC-928	463	0.07
170	GT-3582	60.43	4.92	molasses (Feed grade)	494	4.79
171	GC-10435	62.80	9.45	propifit Chex-Toe®; IFC	604	0.96
172	SPG-124	65.87	2.40	HT-541-233	616	2.47
173	Oxytetracycline; Morestan®;			SYLOID® 74-Grade 74; SG-74	880	0.99
	BAK-36605; ENT 25605	66.47	1.36	rytina	977	1.26
174	SYLOID® 244 - Grade 68; SG-68	67.08	2.18	sulfur	1,051	1.38
175	thiram; Arasan®; Tersan®; 75;			chlorobenzilate; Alaraben®;		
	Thylate®	73.72	1.18	SG-183; G-25992	1,849	1.01
176	calcium arsenate	78.55	4.10	dinitroxyethylphenol; Dinex®;		
177	Dri-Die®; SYLOID® 255-Grade 255;			DN-111; ENOCHE	2,175	0.45
	SG-67	96.69	4.40	SYLOID® 63-Grade 63; SG-63	3,625	0.91
178	GG-8993; ENT 25207	96.69	1.37	SD-14114; Vendex® Miticide;		
179	RM-2360	97.89	1.90	ENT 27738	3,882	0.57
180	GG-9832; 4PK	98.00	2.68	GG-6936	10,031	0.63
181	SYLOID® 378-Grade 78; SG-78	103	3.18			

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TABLE 2. Pesticides Not Toxic at 11 Micrograms per Honey Bee
(at highest dosage tested) in the Laboratory at 48 Hours
at 80°F (26.7°C) and 65 Percent Relative Humidity.
Group III - Relatively Nontoxic to Honey Bees

Reference No.	Pesticide	% Mortality	µg/bee
204	allethrin; pyrethrins, synthetic; ERT 17510	6.00	0.314
205	Batticid®	6.79	0.336 0.338
206	pyrethrum	11.00	0.63
207	rotundone; cubes; derris	12.00	2.42
208	parathion; Paratho®	2.90	2.42
209	paraquat	2.74	6.04
210	dichlorone; Phynox®	7.04	7.25
211	nicotine	3.00	8.70
212	dichlorfluanid; Epoxon®; BAY-47531	3.91	9.06
213	Alamine 21, primary amine; AL-21	2.38	9.06
214	Armen L-15; ARL-15	2.38	9.06
215	Alamine 11, primary amine; AL-11	0	9.06
216	Alamine 15, primary amine; AL-15; Tell oil	0	9.06
217	Alequat 221, tertiary amine; AQ-221	0	9.06
218	Duomen L-15; DL-15	0	9.06
219	methyl chlorobenzilate	1.09	9.67
220	tramite®	26.00	12.00
221	ferbau; Fermate®	16.61	12.09
222	Veggedex®; CDEC	10.03	12.09
223	Salpet; Phaltan®	8.97	12.09
224	DDT antiresistant; WARF antiresistant for DDT; GC-6768	7.79	12.09

225	ethopphon; Ethrel®; Compd. 68-240	7.00	12.09
226	merphos; Folox®	6.14	12.09
227	Eptam®; EPTC	5.91	12.09
228	TD-71	5.85	12.09
229	unben; Parate®	5.71	12.09
230	Glycodin; Glyoxide®	5.03	12.09
231	Randox®; CRAA)	4.73	12.09
232	Triton X-100®	4.51	12.09
233	Benzac®; Tryaben®; 2,3,6-TBA	4.36	12.09
234	nitroole; Woodace®; Cytrex®; NIA	4.10	12.09
235	cuprous oxide	3.52	12.09
236	maneb; Manzate®	2.98	12.09
237	Triton B-1936	2.80	12.09
238	dedine; Syprex®	2.45	12.09
239	310-208; Compd. 908A; NIA-908	2.17	12.09
240	picloram; Tordon® 22K	1.40	14.50
241	beneton; Balan®	7.10	14.50
242	copper oxychloride sulfate; C-O-C-S	7.00	14.50
243	BAY-28589	6.83	14.50
244	barban; Carbene®	5.60	14.50
245	2,4-DB (dimethylamine salt); Butyrad®-118; 4-(2,4-DB)	3.97	14.50
	cypermeth; Clethor®; S-6000	2.90	14.50
	amiben (ammonium salt); Amiben®; chloraben	2.80	14.50
	bencadix; Topicide®; S-6173	2.40	14.50
	bromoxynil; Hnni®; Butric®	2.00	14.50
	D-6	3.33	16.92

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2231	carbons; Baro [®] ; Novon [®]	6.60	18.13	275	sesonet; Sesone [®] ; SES	2.60	24.17
2232	2,4-D (low volatile oil soluble form); Bacaninc [®]	6.64	18.13	276	2,4,5-T	1.93	24.17
2233	AC-94556	6.67	18.13	277	C-940; UNI-C940	1.62	24.17
2234	chlorbenzide; Chlorpyrefos [®] ; Mitox [®] ; ENI 20506	6.60	18.13	278	benazolin; Bentazin [®] ; Prostar [®] ; R-4461	1.60	24.17
2235	Omite [®] ; Comfit [®] ; NO-14; ENT 27226	1.85	18.13	280	glytac [®]	0.85	24.17
2236	acepropos; MCPB; CMPP; 2-MCPP	1.67	18.13	281	GS-13798	0.79	24.17
2237*	D-618 (analogue of Atranite [®])	0	18.13	282	stilbkit [®]	0	24.17
2238	II-36059; ENT 27967	9.94	21.15	283	burylate; Super [®] ; R-1910	14.95	26.01
2239	RP-2929	1.28	21.70	284	NDE, D.E. isomer	16.81	26.59
2240	oxadiazon; Bonstar [®] ; RP-17623	1.28	21.70	285	DDT, Q,P' isomer	16.43	26.59
2241	Acarol [®] ; GS-19851; ENT 27952	5.50	24.00	286	NDE, Q,P' isomer	15.80	26.59
2242	Dinitro [®] ; DNQ; chlorfenethol	4.95	26.03	287	pebulate; PBG; Tillam [®] ; R-2061	13.18	29.01
2243	GC-2066	22.87	24.17	288	NIA-10655	11.97	29.01
2244	GC-2131	13.66	24.17	289	vernolate; Veram [®] ; R-1607	10.89	29.01
2245	trifluralin; Treflan [®]	12.85	24.17	290	molinate; Ordram [®] ; R-4572	10.32	29.01
2246	sesolin; Sustax [®] ; 2,4-DB	7.46	24.17	291	cyclone; Ro-Nest [®] ; R-2063	7.04	29.01
2247	Elymex [®] ; ENT	6.25	25.17	292	UC-21426	8.58	30.22
2248	Ansur [®] 170; Decocane [®] ; MSMA	6.17	26.17	293	UC-21427	5.70	30.22
2249	dalapon; Damon [®] ; Radapen [®]	4.58	26.17	294	Ancor [®] 1221	2.50	30.22
2250	2,4-D (sodium salt)	3.70	26.17	295	Ancor [®] 1240; ENT 8078	1.24	30.22
2251	Indopol [®] Polybutene N-300	3.70	26.17	296	Ancor [®] 1254	1.24	30.22
2252	propanil; EPA; Roger [®] ; Stem [®] F-36;	3.69	26.17	297	Ancor [®] 1260	1.20	30.22
2253	WEED [®] ; MCRA; "New MCP amine weed killer	3.62	26.17	298	Ancor [®] 1232	0	30.22
2254	DEEF [®]	2.99	26.17	299	Ancor [®] 1262	0	30.22
				300	IPC + PPG - 124 Q 4:1	11.30	32.26

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301	chlorpropham; CIPC; chloro TPC; FURALOG	4.90	325	RAX-78175
302	CIPC + VPC - 124 G 4:1	4.50	326	naphthal; Eperol® 200G; Herbtox® 9.10
303	calcium hydrosulfide; RH-30®	4.32	327	Nerica (inhibited); Sodium TCA ethyl formate
304	HCCPD	2.59	328	Amata® X; AMS
305	dimethyl sulfonoxide; DMSO	2.47	329	Frucot®; Tutane®
306	methem; SANIC; VPC; Vapuf®	2.40	330	Sencor®; RAX-94137
307	Kuron®; 2(2,4,5-TP); silvex acid	2.10	331	diamquat; Barvel; IP®
308	disilicate; Avadex®; DATC; CP-15366	2.00	332	rometryne; Capral®; G-34161
309	Pipron®	2.00	333	captafol; folclor; Disolatan®; HB-5865
310	trifluates, Avadex IP®; DATC-BW	1.82	334	simazine; Princep®
311	asulam; Asulox® 60; SAN 9057	1.28	335	emamectine; atrazine; Ametryne®; Zvik®
312	Polysorbate 80®, Tween 80®	0.86	336	GS-34162
313	ulachlor; Lasso®; CP-50124	0.41	337	atrazine; Matrex®; Atrato®; G-30027
314	uni-X840	2.56	338	SUMITOMO®; GS 14254
315	SN-38107; EP-475	9.68	339	norox; Herban®
316	FLTF® MLO; HBAL-3855-2	9.52	340	propazine; Milogard®
317	MEC	8.34	341	NeemSol®; Fumazone®
318	BRL-5337-2	7.61	342	Dexon®; RAX-22555
319	Polyisobutylene	7.34	343	naphthal; Alanap®; NPA
320	polyisobutylene; Polytene®	5.60	344	fentin hydroxide; TPPH; Duter®
321	TGA, acid	4.18	345	chlorodifluoromethylphenimidine; Fungol®;
322	pentachlorophenol, PCP;			Galleron®; ENR 27567; ENR 27333;
	Disicide® 7 flake Koch	2.55	346	EP-333; G-8514
	Disicide® G sodium salt	2.16	347	PRE®; UC-20299
323	ata-10637	0.85	348	Dyrene®; Remate®; B-622.
324	a. chloropropene; Telone®	6.58	349	benomyl; Benlate®; P-1951
				Malorant®; C-6313
				7.25 120.86
				6.47 120.86

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351	metabromuron; Patorin®; C-2126	5.59	120.86	377	bromacil; Hyvar®	1.20	193.38
352	fluorodififen; Preforen®; C-6989	5.40	120.86	378	Alar®	5.80	205.46
353	oifuron; Tuperan®	5.30	120.86	379	captan; Merip®; Orthocide® A06;		
354	GC-10379	4.58	120.86	380	ENT 26538	9.86	215.00
355	chlorouron; Tenuron®	4.50	120.86	381	methor; DSM; Anap® 184	9.80	217.55
356	oxaz; Overtan®; X-6651	3.17	120.86	382	tetradifon; Tedion®	4.33	217.55
357	dichlobenil; Casoron®	3.09	120.86	383	crystite	1.45	217.55
358	Trefenid® (trifluralin, 5% + diphenamid,			384	Dacthal®-T; DAC 893; DCPA	3.18	229.63
359	o. 3.12%)	2.70	120.86	385	Cx-1606B; Sancop®	6.20	235.68
360	dicarbonylic acid; Phykar® 138	2.77	145.03	386	terbutryn; Igran®; GS-14260	2.90	236.40
361	Dikar® (cithane® N-45, 74% + Karathane®, 60) 14.59	5.60	157.12	387	Can-Trol®; Thistrol®; MCPA (sodium salt)	4.00	237.37
362	chlorothalonil; Daconil® 2787; Bravo®	14.28	181.29	388	diatomaceous earth	18.33	241.72
363	nitroallini; Planavin®; SD-11831	6.80	181.29	389	Erianite NGX	12.11	241.72
364	Plantrex®; F-461	5.90	181.29	390	calcium carbonate	8.22	241.72
365	diclofop; Battan®; DCNA; difenil;			391	diphenamid; Dynic®; Enide®	7.29	241.72
	Allitan®			392	phenmedipham; Betanal®; EP-452; S-4075	2.93	241.72
366	Kerb®; RH-315	5.52	181.29	393	olancha clay	2.07	241.72
367	methanole; Probe®; VCS-438	4.80	181.29	394	VIRON®; Heliothis virus	0.58	241.72
368	ditihalon; Thyon®; Delon®	3.79	181.29	395	silimil (heavy)	0.49	241.72
369	carboxin; Vitavax®; D-735	3.09	181.29	396	Attack®	0.43	241.72
370	karbutilate; Tanfer®; NH-11092	2.00	181.29	397	fenoxyprop; silver acid(tech.); 2(2,4,5-TP)	0.41	241.72
371	fluometuron; Cotona®	8.50	193.38	398	cycloheximide; ACTI-AIP®; Actidione®	0	241.72
372	bitume® H-45	3.80	193.38	399	Pyrophyllite; Pyrol®	1.28	362.60
373	pyrasin; Pyramin®; RGA	3.70	193.38		Bacillus thuringiensis Berliner;		
374	terbutec®; Sinbar®	2.40	193.38		Thuricide®; Biotorol®		
375	cyanazine; Bladex®; SD-15418	2.11	193.38		non-toxic @ 726,000 spores/bee		
376	terbutol; AZAN®; Hercules 9273	1.66	193.38				

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TABLE 3. Alphabetical Index of Pesticides with Numerical Reference for Easy Finding in Tables 1 and 2 and also of Each Chemical Designation

Reference No.	Pesticide	
337	Asterix®: 2-chloro-6-ethylenone-6-isopropylamino-2-triazone	215
82	Abar®: 9-(2, 5-dichloro-4-bromophenyl) 9-methyl phenylthio-phosphates	216
71	Abate®: 9,9,9'-trimethyl 9,9'-thiodi-9-phenylene phosphorothioate	217
136	AC-3911: 9,9-dimethyl 1-S-[(ethylthio)methyl] phosphordithioate	218
65	AC-12006: 9,9-dimethyl 5-isopropylthiomethyl phosphordithioate	219
86	AC-12009: 9,9-dimethyl-5-n-propylthiomethyl phosphordithioate	220
2	AC-18133: 9,9-dimethyl 9-n-propylthiomethyl phosphordithioate	221
131	AC-18737: 5-(5-methoxy-4-pyron-2-ylmethyl) 9,9-dimethyl phosphorothioate	222
71	AC-52160: 9,9,9'-tetramethyl 9,9'-thiodi-9-phenylene phosphorothioate	223
15	AC-94556: formula not available	224
253	Acababen®: ethyl 4,4'-dichlorobenzilate	225
15	Acablate®: isopropyl 4,4'-dichlorobenzilate	226
270	Acabrol®: isopropyl 4,4'-dibromo benzilate	227
261	Acetrol®: Acetron®: 9,9-dimethyl 9-(4-nitro-2-nitro-2-nitrophenyl) phosphorothioate	228
27	Ac-thiam®: 9,9-dimethyl 9-(4-nitro-2-nitro-2-nitrophenyl) phosphorothioate	229
165	Acrex®: 2-(1-methyl-2-propyl)-4,6-dinitrophenyl isopropyl carbonate	230
397	AGL-AIDE®: 3[2-(6,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-Glutarimide	231
93	Actidion®: 3[2-(3,5-dimethyl-2-oxocyclohexyl)-2-hydroxyethyl]-2-hydroxyethyl sulfonate	232
215	Alatok®: 9,9-dimethyl 9-(2,5-dichlorophenyl)vinyl phosphorothioate	233
216	AL-11: oleyl amine	234
213	AL-15: oleyl-1-tinoleyl amine	235
313	AL-21: coconut oil amine	236
	Alachlor: 2-chloro-2'6'-diethyl-2-(methoxymethyl)-acetanilide	237
	Anasol®: 10: monosodium acid methanesulfonate	238
	Anasol®: 184: disodium methanesulfonate	239
	Amate®: ammonium sulfate	240
	Ansulf®: ammonium sulfamate	241
	Ansulf®: 170: monosodium acid methanesulfonate	242
	Armitite® (analogue): 2-(p-fert-butylophenoxy)-methvl 2-chloroethyl sulfite	243
	Arasol®: bis(dimethylthiocarbonyl)disulfide	244
	Apxcarb: 2-isopropoxyphenyl methyl carbamate	245
	Aruside®: 2-(p-fert-butylophenoxy)-1-methyl ethyl 2-chloroethyl sulfite	246
	Aruseen L-15: primary benz amine, with 15 carbons	247
	Aruseen L-15: primary benz amine, with 15 carbons	248
	Aruclor®: 1221: polychlorobiphenyl	249

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298	Aroclor®1232: polychlorobiphenyl	BAY 16250: Ω,Ω -diethyl S-(4-oxo-1,2,3-benzotriazine-3(4H)-ylmethyl) phosphordithioate
299	Aroclor®1262: polychlorobiphenyl	BAY 17147: Ω,Ω -dimethyl S-(4-oxo-1,2,3-benzotriazine-3(4H)-ylmethyl) phosphordithioate
300	Aroclor®1288: polychlorobiphenyl	
305	Aroclor®1254: polychlorobiphenyl	
296	Aroclor®1270: polychlorobiphenyl	
297	Aroclor®1270: polychlorobiphenyl	
149	ASPO™: $\Omega,\Omega,\Omega,\Omega$ -tetra- Ω -propylidithiopyrophosphate	
422	azetium: methyl 4-amino-phenylsulfonyl carbamate	BAY 19639: Ω,Ω -diethyl S-[2-(ethylthio) ethyl] phosphordithioate
311	Asulox®602: methyl 4-amino-benzensulfonyl carbamate	BAY 21097: Ω,Ω -2-(ethylsulfinyl) ethyl Ω,Ω -dimethyl 1-phosphorothioate
246	ATA: 3-amino-1,2,4-triazole	BAY 22555: Ω -(dimethylamino) benzencarboxylic acid sodium sulfonate
335	aztrecteryne: 2-ethylamino-6-isopropylaminoo-6-methylthio-2-trifurane	BAY 24541: Ω,Ω -diethyl Ω -(μ -[methylthio]- σ -methyl) 1-phosphorothioate
337	Atrato®: 2-chloro-4-ethylamino-6-isopropylaminoo-2-triazine	BAY 24589: 2,6-di- α -tert-butyl-1,4-nitrophenyl
337	atrazine: 2-chloro-4-ethylamino-6-isopropylaminoo-2-triazine	BAY 27493: Ω,Ω -dimethyl 1,2-[4-(me β thio)- σ -methyl] 1-phosphorothioate
395	Atreclay®: hydrated magnesium aluminum silicate	BAY 30120: 3,4-dichloropropenonanilide
308	Avadex®: Σ -2,3-dichlorallyl diisopropylthiocarbonate	BAY 30686: 2,3-quinoxalinedithiol cyclic trithiocarbonate
310	Avadex BH®: Σ -2,3,3-trichlorallyl diisopropylthiocarbonate	BAY 30911: methyl- Ω -methyl 1,2,4-dichlorophenoxy-1 phosphorothioate
326	AZAK®: 2-6-di- α -tert-butyl-2-tolylmethylcarbamate	BAY 33051: Ω,Ω -dimethyl Σ -(μ -ethoxycarbonylbenzyl)-phosphordithioate
52	azinphosethyl: Ω,Ω -diethyl S-(4-oxo-1,2,3-benzotriazine-3(4H)-ylmethyl) phosphordithioate	BAY 36205: 6-methyl-1,2,3-quinoxalinedithiol cyclic S,S-dithiocarbonate
52	azinphosethyl: Ω,Ω -diethyl S-(4-oxo-1,2,3-benzotriazine-3(4H)-ylmethyl) phosphordithioate	BAY 37289: Ω -ethyl Ω -(2,4,5-trichlorophenyl) ethyl phosphorothionite
31	azinphosethyl: Ω,Ω -diethyl S-(4-oxo-1,2,3-benzotriazine-3(4H)-ylmethyl) phosphordithioate	BAY 37344: 4-(methylthio)3,5-xylyl methyl carbamate
19	azinphosethyl: Ω,Ω -diethyl S-(4-oxo-1,2,3-benzotriazine-3(4H)-ylmethyl) phosphordithioate	BAY 38156: Ω -ethyl- Σ -2-tolyl ethyl phosphordithioate
20	Azodrin®: dimethyl phosphate, ester with cis 3-hydroxy-N-methyl crotonamide (analogue of Bidrin®)	BAY 39007: Ω -isopropoxyphenyl methyl carbamate
362	B-622: 2,4-dichloro-6- σ -chloroanilino-2-triazine	BAY 39731: Ω -isopropylphenyl Σ -methyl carbamate
399	Bacillus Strutinensis Berliner: Bacillus thuringiensis	BAY 41831: Ω,Ω -dimethyl Σ -(μ -nitro- σ -tolyl) phosphordithioate
205	Bactein™: Berlese spores and crystalline protein toxin	BAY 44646: 4-dimethylamino- μ -tolyl methyl carbamate
241	Balan®: N-butyl-N-ethyl-2,5-difluoro-2,6-dinitro-2-nitrofuran	BAY 47531: Σ -dichlorofluoromethylthio- N,N '-dimethyl- Σ -phenylsulfamide
153	Bundane®: polychlorodicyclopentadiene isomers	BAY 48733: 2,2,2-trichloro- Σ -(penta chlorophenoxy) acetimidoyl chloride
88	Bonox®: 6-chloro-3,4-xylyl-methylcarbamate	BAY 68138: ethyl 4-(ethoxythio)- μ -tolyl isopropyl phosphordithioate
121	Bonoxito®: benzoyl chloride (2,4,6-trichlorophenyl) hydrazone	BAY 71628: Ω,Ω -dimethyl phosphordithioate
232	Banvello®: 3,6-dichloro- σ -acetildenafil	BAY 77488: phenylglyoxonitrile oxime Ω,Ω -diethyl phosphorothioate
246	barbunt: α -chloro-2-butynyl μ -chlorocarbamate	BAY 78175: N,N' -bispropyl- Σ , Σ -(dichlorofluoromethylthio) sulfamide
251	Baron®: 2-(2,4,5-trichlorophenoxy) ethyl-2,2-dichloropropane	BAY 93820: isopropyl sulfonylate Ω -ester with Ω -methyl phosphordithioate
91	BAY 8169: mixture of Ω,Ω -diethyl Σ (and Ω) [2-(ethylthio) ethyl] phosphordithioates	BAY 94337: 4-nitino-6- σ -butyl-3-(ethylthio)- Σ 2,4-triazin-5(4H)-one
25	BAY 9026: 4-(methylthio) 3,5-xylyl methylcarbamate	Baygon®: Ω -isopropoxyphenyl methyl carbamate
16		Baytex®: Ω,Ω -dimethyl Ω -(μ -tolyl) phosphordithioate
		Ethythion®: phenylglyoxonitrile oxime Ω,Ω -diethyl phosphordithioate

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241.	benefin: N-butyl-N-methyl-3,5,5-trifluoro-2,6-dinitro-2-cyclohexene	74	992: 3:1 mixture of Σ -(1-methylbutyl) phenyl methyl carbamate and Σ -(1-methylpropyl) phenyl methyl carbamate
348.	Pentane [®] : methyl, 1-(butylcarbamoyl)-2-benzimidazolecarbamate	277	C940: 2-(tert-butylphenoxyl)-1-ethyl-ethyl-2-tolyl sulfite
363.	enonyl: methyl 1-(butylcarbamoyl)-2-benzimidazolecarbamate	12	C2307: 3-(dimethoxyphosphoryloxy)-N-methyl-N-methoxy- Σ -isocrotonamide
278.	benzulfide: Σ -(O,O-disopropyl phosphorodithioate) ester of N-(12-mercaptoethyl) benzeneulfonamide	351.	C-3126: 3-(α -bromophenyl)-1-methoxy-1-methylurea
233.	Benzac [®] : 2,3,6-trichlorobenzoic acid	349	C-6313: 3-(4-bromo-3-chlorophenyl)-1-methoxy-1-methylurea
248.	benzodox: ammonium (benzenidoxy) acetate	352.	C-6988: Σ -trifluorophenyl 2,6,2-trifluoro-2-nitro-2-tolyl ether
391.	Retanal [®] : methyl 3-hydroxycarbamilate Σ methyl-carbamate	83	C-8353: 2-(1,3-dioxolane-2-yl)-phenyl-1-N-methyl carbamate
278.	Butisan [®] : Σ -(O,O-disopropyl phosphorodithioate) ester of N-(2-mercaptoethyl) benzeneulfonamide	345	C-8514: N-(4-chloro-2-tolyl)-N,N-dimethyl-1-formamide
38.	BRC, Gamma isomer: 1,2,3,4,5,6-hexachlorocyclohexane, 99% or more gamma isomer	68	C-8874: 2-(2-diethyl-0,2,5-dihydro-4-tetraphenyl thiophosphate carbamate
15.	Bidrin [®] : aliphatic phosphate, ester with Σ -(3-hydroxy-N,N-dimethylcarbamoyl)	54	C-9473: 2-(4-methyl-1,3-dioxolan-2-yl)-phenyl-1-methyl carbamate
141.	binapucryl: 2-sec-butyl-4,6-dinitrophenyl 3-methyl-2-butenoate	105	C-9491: 2-(2,5-dichloro-4-tetraphenyl thiophosphate
239.	BIO 908: a complex of 2 moles of cuprous dialkyl phosphorodithioate with one molecule of hist(dialkoxypyrophosphothioyl) disulfide wherein the alkyl groups are an equimolar mixture of ethyl and isopropyl	97	C-10015: 2-(4,5-dimethyl-1,3-dioxolane-2-yl)-phenyl N-methyl carbamate
71.	Biotin [®] : Σ , Ω , Ω' -tetramethyl Ω , Ω' -thiodiphenylene phosphorothioate	360	360: Σ -(trichloromethyl)thio]4-cyclohexene-1,2-dicarboxylic acid
399.	Biotrof [®] : <i>Bacillus thuringiensis</i> Serilizer spores and crystalline protein toxin	176	calcium arsenite: calcium arsenate
375.	Bindex [®] : 2-(4-chloro-6-ethylaminor-8-triazin-2-ylamino)2-methylpropanitrile	389	calcium carbonate: calcium carbonate
47.	Bunyyl [®] : dimethyl 3'-hydroxyglutamate, dimethylphosphate	386	Cen-Tror [®] : 4-(2-methyl-4-chlorophenoxy) butyric acid
365.	Botran [®] : 2,6-dichloro-4-nitroaniline	333	Genoral [®] : 2,6-bis(isopropylamino)-6-methoxyacetophenone-2-uridine
316.	BRM 3855-2: mineral oil, 99%	336.	Captafol: Σ -(1,1,2,2-tetrachloroethyl)thio]4-cyclohexene-1,2-dicarboxylic
318.	BRM 5337-2: mineral oil, 99%	379	captan: Σ -(trichloromethyl)thio]4-cyclohexene-1,2-dicarboxylic acid
362.	Etovo [®] : tetrachloroisophthalonitrile	57	Carbanilate: 3-methyl-5-isopropylphenyl-1-N-methyl carbamate
377.	bromacil: 5-bromo-3-sec-butyl-6-methyluracil	88	carbanilate: 6-chloro-3,4-Xylyl-methyl carbamate
269.	Bromaf [®] : 3,5-dibromo-4-hydroxybenzonitrile	60	carbarbyl: 1-trinaphthyl-N-methyl carbamate
249.	Bromonyll: 3,5-dibromo-4-hydroxybenzonitrile	5	carbosuran: 2,3-dihydro-2,2-dimethyl-1,7-benzofuranyl methyl carbamate
249.	Butril [®] : 3,5-difluoro-4-hydroxybenzonitrile	110	carbophenothion: Σ -(α -chlorophenyl)thio]4,5-dimethyl phosphorus dithionate
283.	Butyrate: Σ -ethyl-1-N-[2-(isobutylthiocarbamate	369	carboxin: 5,6-dihydro-2-methyl-1,4-oxanthine-3-carboxamide
245.	Butyrac [®] 11B: 4-(2,4-dichlorophenoxy) butric acid, dimethylamine salt	244	Cathyne [®] : 4-chloro-2-butynyl N-chlorocanthanilate

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144	Carbol SR [®] : m-[(dimethylamino)methyl]ene [mimino]phenyl methyl carbamate, hydrochloride	302	CIPC + PEG - 124 @ 4:1: isopropyl m-chlorocarbamate + 2-chlorophenyl N-methyl carbonate
337	Caserton [®] : 2,6-dichlorobenzonitrile	29	CL-38023: 2-(dimethylsulfamoyl)phenyl O,O-dimethyl phosphorothioate
231	CBAA: 2-chloro-N,N-diallylacetamide	246	Clober [®] : 3',4'-dichlorocyclopropane carboxanilide
222	CDEC: 2-chloroallyl-N,N-dimethylthiocarbamate	256	CMPP: 2-(4-chloro-2-methoxyphenyl) propionic acid
234	Chem-Roc [®] : isopropyl carbamate	182	CMU: 3-(2-chlorophenyl)-1,1-dimethylurea
183	chinochiorate: 2,3-quinoxalinedithiol cyclic trithiocarbonate	242	C-O-C-S: copper mychioride sulfite
247	chloramben: 3-amino-2,5-dichlorobenzoic acid	255	Coate [®] : 2-(2-tert-butylphenyl) cyclohexyl-2-propenyl sulfite
234	chlorbenzide: 2-chlorophenyl 2-chlorobenzoic acid	80	Compd. 269: hexachlorotripropoxycetylhydro-endo,endo-dimethanephthalene (principal constituent)
98	chlorane, α & γ Isomers: octachloro-4,7-methanotetrahydrodrotinane, α & γ chlorane (>97%)	72	Compd. 71F: 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-1,4-endo-endo-5,8-dimethanophthalene
116	chlorane: 1,2,4,5,6,7,8,8-octachloro-2,3,3E,2,4,7,7E-hexahydro-4,7-methanofindane	239	Compd. 908A: a complex of 2 moles of cuprous dialkyl phosphorodithioate with one molecule of bis(dialkoxyporphosnithio(oyl)) difluoride. Wherein the alkyl groups are an equimolar mixture of ethyl and isopropyl
133	chlorane: 1,2,4,5,6,7,8,8-octachloro-2,3,3E,2,4,7,7E-hexahydro-4,7-methanofindane	138	Compd. 1189: decachlorooctahydro-1,3,4-metheno-2H-cyclobutaphenalen-2-one
138	chlordecone: decachloro-octahydro-1,3,4-metheno-2H-cyclobutaphenalen-2-one	60	Compd. 7744: 1-naphthyl N-methylcarbamate
345	chlorfumeform: N-(4-chloro- α -tolyl)-N,N-dimethyl-formamide, hydrochloride	225	Compd. 68-240: 2-chloroethylphosphonic acid
199	chlorheminate: ethyl 4,4'-dichlorobenzilate	242	copper oxychloride sulfate: copper oxychloride sulfate
262	chlorfengathol: 4,4'-dichloro-2-methylbenzhydrol	371	Catoran [®] : 1,1-dimethyl-1-(a,b,e-trifluoro-m-phenyl) urea
301	Chloro IIP: isopropyl m-chlorocarbamate	139	CP-10502: 1-(dimethoxyphosphoryl)vinyl dimethyl phosphate
234	Chloropacacid [®] : 2-chlorophenyl 2-chlorophenyl sulfide	145	CP-10516: 1-(diethoxyphosphoryl)vinyl dimethyl phosphate
279	chloropropylate: isopropyl 4,4'-dichlorobenzilate	208	CP-15366: S-(2,2-dichloroallyl) diisopropylthiocarbonates
362	chlorothulonil: tetrachloroisophthalonitrile	190	CP-31393: 2-chloro-N-isopropylacetanilide
355	chloroxuron: 3-(2-(2-chlorophenyl)-phenyl)-1,1,1,1-tetra	27	CP-47114: O,O-dimethyl 3-(4-nitro-m-tolyl) phosphorothioate
345	chlorphenamidine: N'-(4-chloro- α -tolyl)-N,N-C-formamide	313	CP-S0164: 2-chloro-2'-6'-diethyl-3-(methoxy-phosphoryl)-acetylulfide
3	chlorpropham: isopropyl m-chlorocarbamate	85	crotoxyphost: trimethylbenzyl 3-(dimethoxy-phosphoryl)-acetylulfide
17	chlorpyrifos: O,O-diethyl O-(3,5,6-trichloro- α -ethoxyarboxybenzylidene) phosphorothioate	382	cryelite: sodium fluor aluminate
85	CINPA [®] : O,O-dimethyl S-(α -ethoxyarboxybenzylidene)crotone	161	CS-708: 1,1-bis(2-chlorophenyl)-2-nitropropane and butane mixture
301	Cledin [®] : 2-methylbenzyl 3-(dimethoxy-phosphityl)-6,9-dimethoxy-1,1benzopyran-2,3-benzo[2,3-b]benzopyran-4-(6H)one	207	cyanazine: 2-(4-chloro-2-ethylamino-3-triazin-2-ylamino) 2-methylpropionitrile
235	cuprous oxide: cuprous oxide		
375	cyanazine: 2-(4-chloro-2-ethylamino-3-triazin-2-ylamino) 2-methylpropionitrile		

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291	cyclamate: 2-ethylcyclohexyl ethyl thiocarbamate	mp, 0, E ¹ -isomer: 1,1-dichloro-2-(<i>o</i> -chlorophenyl)-2-(<i>p</i> '-chlorophenyl)ethylene
397	ethyli- <i>l</i> -glutarimide: 3-(2-[3,5-dimethyl-2-oxocyclohexyl]-2-hydroxy- <i>o</i> -ethyl)- <i>l</i> -glutarimide	mp, 0, E ¹ -isomer: 1,1-dichloro-2,2-bis(<i>p</i> '-chlorophenyl)ethane
8	Cygon [®] : 0,0-dimethyl S-(<i>N</i> -methylLaubanaylmethyl) phosphorodithioate	mp, 0, E ¹ -isomer: 1,1,1-trichloro-2,2-bis(<i>p</i> '-chlorophenyl)ethane
108	Cyclane [®] : 2-(diethoxyphosphorylimino)-1,3-dithiolane	mp, 0, E ¹ -isomer: N,N-di-n-butyl-p-chlorobenzene sulfonylformamide
238	Cypress [®] : <i>N</i> -dodecyl quinidine acetate	mp, 0, E ¹ -isomer: 1,1,1-trichloro-2-(<i>p</i> '-chlorophenyl)-2-(<i>p</i> '-chlorophenyl)ethane
246	cypromid: 3',4'-dichlorocyclopropane carbonanilide	mp, 0, E ¹ -isomer: 1,1,1-trichloro-2-(<i>p</i> '-chlorophenyl)-2-(<i>p</i> '-chlorophenyl)ethane
46	Cythion [®] : diethyl mercaptosuccinate, S-esterified with 0,0-dimethyl-phosphorodithioate	mp, 0, E ¹ -isomer: 1,1,1-trichloro-2-(<i>p</i> '-chlorophenyl)-2-(<i>p</i> '-chlorophenyl)ethane
234	Cyrol [®] : 3-amino-1,2,4-triazole	mp: 2,2-dichlorovinyl 0,0-dimethyl phosphate
99	Cyrotane [®] : 2-(diethoxyphosphorylimino)-4-methyl-1,3-dithiolane	2,4-DNB: 2,4-dichlorophenetoxymethyl benzoate
270	2,4-D(naOH salt): 2,4-dichlorophenoxyacetic, sodium salt	DEG [®] : S,S,S-trifuryl phosphorotri thioate
252	2,4-D(ter volatile oil soluble form): 2,4-dichlorophenoxyacetic acid, <i>N</i> -oleyl 1,3-propylene diamine salt	DE-FEND [®] : 0,0-dimethyl S-(N-methylLaubanaylmethyl) phosphorodithioate
250	D-6: monohydrated copper sulfate	Delant [®] : 5,10-dihydroxy-5,10-dioxonaphtho-(2,3B)-2-p-dithiin-2,3-dicarbonitrile
255	D-014: 2-(<i>p</i> -tert-butylphenoxy) cyclohexyl-2-propynyl sulfite	Delmy [®] : 2,3-p-dioxanedithiol S,S-bis-(0,0-dimethyl phosphorodithioate)
257	D-0X8: 2-(<i>p</i> -tert-butyl phenoxy)-methy 1,2-chloroethyl sulfite	demeton: mixture of 0,0-dimethyl S-(and O)[2-(ethylthio)ethyl] phosphorothioates
369	D-735: 5,6-dihydro-2-methyl-1,4-oxathith-3-oxabunnilide	derrit: 1,2,12,12a-tetrahydro-2-f-isopropenyl-8,9-dimethoxy-[1]benzopyran-1,6(6H)-one
383	DIC-893: dimethyl tetrachloroterephthalate	Desin [®] : 2-(1-methyl-1-2-propyl)-4,6-dinitrophenyl isopropyl carbamate
252	Bacamine [®] : 2,4-dichlorophenoxyacetic acid, <i>N</i> -oleyl 1,3-propylene diamine salt	Dexon [®] : 2-(dimethylamino)benzenelazo sodium sulfonate
258	Dacome [®] : monosodium acid methanesulfonate	disulfoton: S-(2-chloro-1-phthalimidooethyl)0,0-dimethyl phosphorodithioate
352	Dacron [®] 2787: tetrachloroisophthalonitrile	disulfoton: S-(2,3-dichlorallyl) disopropylthiocarbamate
383	Dacthal [®] -T: dimethyl tetrachloroterephthalate	diamaceous earth: diamaceous structure (silica)
269	dalapon: sodium 2,2-dichloropropionic acid	BLAZINOR [®] : 0,0-dimethyl S-(2-isopropyl-6-methyl-4-pyrimidinyl) phosphorothioate
21	Dasanit [®] : 0,0-dimethyl 0-(2-(methylbutyl)) phenyl phosphochlorate	disulfoton: 0,0-dimethyl 0-(2-4-isopropyl-1,6-methyl-4-pyrimidinyl) phosphorothioate
308	DATC: S-(2,3-dichlorallyl) disopropylthiocarbamate	Dibrom [®] : 1,2-dibromo-2,2-dichloroethyl dimethyl phosphate
310	DATC-Bu [®] : S-(2,3,3-trichlorallyl) disopropylthiocarbamate	dicamba: 3,6-dichloro-2-anisicacid
265	2,4-DB (dimethylamine salt): 4-(2,4-dichlorophenoxy) butric acid, dimethylamine salt	dichlobenil: 2,6-dichlorobenzonitrile
245	4-(2,4-DB): 4-(2,4-dichlorophenoxy) butric acid, dimethylamine salt	
365	DCPA: 2,6-dichloro-4-nitroentline	
283	DCPA: dimethyl tetrachloroterephthalate	
185	DDP: 1,1-dichloro-2,2-bis(<i>p</i> -chlorophenyl)ethane	
357		

212	dichloriumid: N-dichlorofluoromethylthio-N,N'-dimethyl- $\text{N}^{\bullet}\text{N}'$ -phenylsulfamide	159	pinosch: 4,6-dinitro-2-sec-butylophenol, alkanolamine salt
	dichlone: 2,3-dichloro-1,4-naphthoquinone	183	dioxenarb: 2-(1,3-dioxolanane-2y1)-phenyl-1-N-methyl carbamate
210	dichloropropene: 1,3-dichloropropene (and other related chlorinated hydrocarbons)	152	dioxanthion: 2,3-E-dioxane-dithiol S,S-bis-(O,O-diethyl phosphordithionate)
324	dichloroxes: 2,2-dichloroxetyl S,O -dimethyl phosphate	390	diphemid: N,N-dimethyl-2,2-diphenoxyacetamide
14	diloren: 2,6-dichloro-4-nitroniline	169	Diptane \circledR : dimethyl-(2,2,2-trichloro-1-hydroxyethyl) phosphonate
365	difefol: 1,1-bis(chlorophenyl)-2,2-trichloroethanol	115	disulfoton: O,O-diethyl S-[2-(fetlythio)ethyl]phosphoro- O -dithioate
184	dicrotophos: dimethyl phosphate, ester with cis-3-hydroxy-N,N'-dimethyl isobutanide	115	Ul-Syston \circledR : O,O-diethyl S-[2-(ethylthio)ethyl] phosphoro- O -dithioate
4	dieldline: 1,2,3,4,10,10-hexachloro-exo-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo-exo-5,8-dimethionaphthalene	372	Dithane \circledR M-45: zinc(163)-manganese(27) ethylene bis(dichloroethanamine) (622)
334	Difolatan \circledR : zinc-N-[1,1,2,2-tetrachloroethyl]thio]-4-cyclohexene-1,2-dicarboxylate	268	dithianone: 5,10-dihydroxy-5,10-dioxane-phtha-(2,3b)-E-dithia-2,3-dicarboxonitrile
361	Dikar \circledR : zinc-manganese ethylene bisdithiocarbonate, 74% + 2% capryl-6-dinitrophenyl erucogone, 6%	365	ditranil: 2,6-dichloro-4-nitroaniline
161	Dilak \circledR : 1,1-bis(p-chlorophenyl)-2-nitropropane and butane mixture	359	disuron: 3-(3,4-dichlorophenoxy)-1,1-dimethylurea
66	Dimecro \circledR : 2-chloro-2-diethylcarbamoyl-1-methyl vinyl dimethyl phosphate	218	DL-15: primary beta diamine, with 15 carbons
23	0 dimenthant: O,O-dimethyl S-(N-methylcarbamoylmethyl) phosphordithionate	262	DMCI: 4,4'-dichloro- α -methylbenzhydrol
305	dimethyl sulfosides: dimethyl sulfoxide	154	DMT: 1,1,1-trichloro-2,2-bis(p-methoxyphenyl) ethane
123	Dimentan \circledR : 2-dimethylcycloamyl-3-methyl-5-pyrrozoly1 dimethylcarbamate	305	DSO: dimethyl sulfoxide
123	dimellitan: 2-dimethylcycloamyl-3-methyl-5-pyrrozoly1 dimethylcarbamate	267	DRT: tetrahydro-3,5-dimethyl-1-2H-thiadiazine-2-thione
262	Dinitco \circledR : 4,4'-dichloro- α -methylbenzhydrol	200	DN-111: 2-cyclohexyl-4,6-dinitrophenol, dicyclohexylamine salt
200	Dinick \circledR : 2-cyclohexyl-4,6-dinitrophenol, dicyclohexylamine salt	159	DNBP alicyclic salt: 4,6-dinitro- α -sec-butylphenol
200	dinitrocyclohexylphenol: 2-cyclohexyl-4,6-dinitrophenol, dicyclohexylamine salt	200	DNOCIP: 2-cyclohexyl-4,6-dinitrophenol, dicyclohexylamine salt
165	dinobuton: 2-(1-ethyl-1-2-propyl)-4,6-dinitrophenyl isopropyl carbonate	238	diclidine: 2-dodecylguanidine acetate
157	dinecaps: 2,4-dinitro-6-octyl (*) phenyl croconate, 2,6-dinitro-6-octyl (*) phenyl crotonate, and nitrocyt (*) phenols (principally dinitro)	322	Dowida \circledR 7 Flake tech: pentachlorophenol, sodium salt
	tri A mixture of 1-methylheptyl, 1-ethylhexyl, and 1-propylpentyl isomers.	19	Dowide \circledR G: sodium salt: pentachlorophenol, sodium salt
		169	Doweo 139 \circledR : 4-dimethylamine-3,5-silyl- N -methylcarbamate
		26	Doweo 179: O,O-diethyl O-(3,5-o-trichloro-4-2-pyridyl) phosphorothioate
		120	Dow ET-14: O,O-diethyl O-(2,6,5-trichlorophenyl) phosphorothioate

76	Dow ET-15: $\text{O}=\text{methyl O-2,4,5-trichlorophenyl phosphorodithioate}$	80	endritic; hexachloropropoxytetrahydro- <u>endo</u> -dimethyleneprophane
120	Dow ET-57: $\text{O}_2\text{N-dimethyl O-(2,4,5-trichlorophenyl) phosphorothioate}$	80	lene (principal constituent)
273	Dow MCP Amine weed killer: 4-chloro-2-methylphenoxy acetic acid	390	Esteride: $\text{N},\text{N}\text{-dimethyl 1,2,2'-phenyleneacetamide}$
269	Dopon [®] : sodium 2,2-dichloropropionic acid	124	ENT 1306: 1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane
272	DPA: 3,4-dichloropropionanilide	185	ENT 4225: 1,1-dichloro-2,2-bis(p-chlorophenyl)ethane
177	Dreidine [®] : 99.5% silicon dioxide plus ammonium silicofluoride to content of 32% fluorine	295	ENT 8078: polychlorodiphenyl
36	Drixon H-34: 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-octahydroindane	204	ENT 11510: dl-2-allyl-1,4-hydrazin-3-methyl-1-cyclopenten-1-one of mixed cis and trans, dl-chrysanthemum monocarboxylic acids
218	Duameen L-15: primary beta,dimine, with 15 carbons	169	also referred to as allyl homolog of Ginerin I.
3	Dursban [®] : $\text{O}_2\text{N-dimethyl O-(3,5-trichloro-2-pyridyl)phosphorothioate}$	254	ENT 19763: dimethyl (2,2,2-trichloro-1-hydroxyethyl) phosphonate
280	Dissodium methanesulfonosarcosinate	52	ENT 20696: p-chlorobenzyl p-chlorophenyl sulfide
218	Duameen L-15: primary beta,dimine, with 15 carbons	152	ENT 22014: 2,2-dichethyl S-(p-oxo-1,2,3-benzenetriazine-3-ylmethyl) phosphordithioate
3	Dursban [®] : $\text{O}_2\text{N-dimethyl O-(3,5-trichloro-2-pyridyl)phosphorothioate}$	23	ENT 22374: 2-methoxycarbonyl-1-methyliviny1 dimethylphosphonate
244	Du-Tat [®] : triphenyl tin hydroside	152	ENT 22897: 2,3-dioxanedithiol S,S-bis-(O,O-diethyl phosphorodithioate)
169	Dylor [®] : dimethyl (2,2,2-trichloro-1-hydroxyethyl) phosphonate	15	ENT 24482: dimethylphosphate, ester with <u>cis</u> -3-hydroxy-1,N-dimethylcrotonamide
390	Dymid [®] : $\text{N},\text{N}\text{-dimethyl-2,2-diphenylacetamide}$	8	ENT 24650: $\text{O}_2\text{N-dimethyl S-(N-methylcarbamoylmethyl) phosphorodithioate}$
347	Dyrene [®] : 2,4-dichloro-6-(α -chloroanilino)-2-triazine	21	ENT 24945: $\text{O}_2\text{N-(2-ethylcyclic 1,2,3-trihydro-1,2-dihydro-1,3-dioxolane-4-ylmethyl) phenyl phosphorodithioate}$
92	EL-43064: 2-(dichlorophosphorylimino)-1,3-dithiobolane	21	ENT 25207: triphenyl tin chloride
108	EL-47011: 2-(dichlorophosphorylimino)-1,3-dithiobolane	178	ENT 25540: $\text{O}-[\text{4-(methylthio)-m-tolyl}]phosphorothioate$
99	EL-52160: $\text{O}_2\text{N-O'-O'-tetramethyl O-O'-thiodi-n-phenylene phosphorothioate}$	18	ENT 25830: $\text{O}_2\text{N-dimethyl O-2-pyrazinyl phosphorothioate}$
71	Electron [®] : 2-(1,3-dioxolane-2-yl)-phenyl-N-methyl carbamate endostilbant	2	ENT 25666: 5,5-dimethyl-2,3-quinoxalinediimidic cyclic S,S-dithiocarbonate
83	Electron [®] : 2-(1,3-dioxolane-2-yl)-phenyl-N-methyl carbamate endostilbant	173	ENT 25635: methyl-1-O- $\text{O}_2\text{N-CH}_2\text{CH}_2\text{O}_2\text{N-CH}_2\text{CH}_2\text{O}$ phosphorothioate
146	Endosulfan: 6,7,8,9,10,16-hexachloro-1,5,5a,6,9-hydro-6,9-methano-2,4,3-benzole(dioxaphosphorin 3-oxide epoxidoufam (C. W. 50)): 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexamylidenehexachloro-2,4,3-benzole(c)dioxaphosphorin 3-oxide	102	ENT 25671: $\text{O}=\text{Isopropoxyphe}n\text{yl methylcarbamate}$
130	Endosulfan: 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexamylidenehexachloro-2,4,3-benzole(c)dioxaphosphorin 3-oxide	62	ENT 25712: $\text{O}-\text{ethyl O-(2,4,5-trichlorophenyl) ethylphosphonate}$
148	Endosulfan: 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexamylidenehexachloro-2,4,3-benzole(c)dioxaphosphorin 3-oxide	87	ENT 25713: $\text{O}-\text{ethyl-S-N-}(\text{p-tolyl})\text{ethylphosphonodithioate}$
153	Endosulfan: 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexamylidenehexachloro-2,4,3-benzole(c)dioxaphosphorin 3-oxide	101	ENT 25715: $\text{O}_2\text{N-dimethyl O-(4-nitro-2-furyl) phosphorothioate}$
131	Endophite: $\text{S-(5-methoxy-4-pyron-2-yimethyl)O}_2\text{N-dimethyl phosphorothioate}$	27	ENT 25726: 4-(methylthio)3,5-xylyl methylcarbamate
		25	

17	ENT 25736: 4-dimethylaminotri-3,2-oxoly-1,2-methyloxamate	75	ENT 27334: 2-isopropylphenyl N-methylcarbamate
39	ENT 25740: 4-dimethylaminoglycidyl methylcarbamate	345	ENT 27335: N-(6-chloro-2-tolyl)-N,N-dimethyl-formamide
132	ENT 25942: exo-3-chloro-2- <i>para</i> -6- <i>para</i> -2-norbornane O-(methylcarbamoyl)oxime	82	ENT 27338: 2-(2,5-dichloro-4-bromophenyl) 2-methyl phenyl thiophosphate
379	ENT 26538: cis-8-[tertbutylmethyl]ethoxy-4-cyclohexene-1,2-dicarboxylic acid	17	ENT 27339: 2,2-dimethyl S-(2- <i>alpha</i> -bromoacetoxybenzyl)-phosnorodinitrinate
191	ENT 26711: a mixture of [ethylacetate (ethylcarbamate)] zinc and [dithiobis(2-thiocarbonyl)-iminoethylene] bis(dithiocarbamate) zinc	49	ENT 27393: methyl 2-(2-propyl-1,4-(methylcarbamoyl)oxy) carbamate
279	ENT 26999: isopropyl 4,4'-dichlorobenzilate	160	ENT 27395: tricyclohexylhydroxytin
30	ENT 27041: 4-oxocetamidoyl N-methyl-carbamate	48	ENT 27405: 2,2-dimethyl S-(1-succinimidooethyl) phosphorodithioate
13	ENT 27053: 2-methyl-1-2-(methylthio)propionaldehyde O-(methylcarbamoyl)oxime	105	ENT 27408: 2,2-dimethyl-O-(2,5-dichloro-4-iodophenyl) thiophosphate
74	ENT 27127: 3-C mixture of m-(1-methylbutyl) phenyl-methyl-N-carbamate and N-(1-ethylpropyl) phenyl-methylcarbamate	68	ENT 27409: 2,2-dichloro-4-iodophenyl thiophosphate
20	ENT 27129: dimethyl phosphate, ester with 2-(3-hydroxy-N-methylcarbamide (analogue of Bidrin")	126	ENT 27410: 2-(4,5-dimethyl-1,3-dioxane-2-y1)-phenyl-1-N-methylcarbamate
106	ENT 27154: ethyl 1,1a,3,3a,4,5,5,5a,5b,6-deachlorooctahydro-2-hydroxy-1,3,4-methano-1H-cyclobut-1H-pentale-2-levinate	16	ENT 27428: 2,6-dichloro-1-phenoxyacryloyl-2-trifluoromethylbenzimidazole
134	ENT 27163: 2,2-dimethyl S-(6-chlorobenzene-3-y1-methyl) phosphorodithioate	117	ENT 27448: phenylglyoxylic triole oxide O,O-dieethyl phosphorothioate
5	ENT 27164: 2,3-dihydro-2,2-dimethyl-1,7-benzofuranyl methylcarbamate	261	ENT 27473: 4-(N,N-dimethylaminomethyl-1-methine)-3-methyl-phenyl methylcarbamate hydrochloride
71	ENT 27155: 2,2,2',2'-tetramethyl 2,2'-thiobis(p-phenylene phosphorodithioate	144	ENT 27552: isopropyl-6,6'-dibromoazide
9	ENT 27197: 2,2-dimethyl S-[2-methoxy-1,3,4-thiadiazol-5-(4H)-onyl-4-methyl] phosphorodithioate	345	ENT 27564: 2-(4-methyl-1,3-dioxolan-2-y1)-phenyl-N-methylcarbamate
255	ENT 27226: 2-(2-furylphenyl)cyclhexyl propenyl sulfite	40	ENT 27615: 2,2-dimethyl S-(4-methyl-2,4-imidazolidine-dione-3-y1)methyl phosphorothioate
165	ENT 27246: 2-(1-methyl-1-2-propynyl)-4,6-dinitrophenyl isopropyl carbonate	12	ENT 27625: 3-(dimethylphosphoryloxy)-N-methyl-N-methoxyisopropanamide
158	ENT 27220: S-(2-chloro-1-phthalimidooethyl)O,O-diethyl phosphorodithioate	121	ENT 27646: benzoyl chloride-(2,4,5-trichlorophenyl)hydrazone
188	ENT 27323: 2,2,2-trifluoro-N-(pentachlorophenyl) acetoxoyl chloride.	35	ENT 27659: isopropyl salicylate Q-ester with Q-methylphosphonate

257	RNT 27727: 2,4-dinitro-6-octyl (4-phenyl crotonate, 2,6-dinitro-4-octyl (4-phenyl crotonate, and nitroxy1 (4-phenols (principally dinitro)	212	Euparten [®] : N'-Methylsuccinimido-N,N'-dimethyl-N'-methylsulfonamide
	*** A mixture of 1-methylbenzyl, 1-ethylbenzyl, and 1-propynylbenzyl isomers	336	Zutik [®] : 2-ethyliarmino-4-isopropylaminio-6-ethyliithio-5-triazine
292	ENT 27733: diisotornane, heptakis(beta, beta-dimethylphenyl) 1,2,4,6-triazole	364	F 461: 5,6-dihydro-2-methyl-1,4-oxathian-3-carboxanilide-4,4-dioxide (the dioxide of Vitavac or carboxin)
73	ENT 27760: N/A	343	F 391: methyl 1-(t-butylecarbamyl)-2-henzimidazolecarbamate
11	ENT 27764: 1-phenyl-3-(2,6-dibetyl-phosphoryl)-1,2,4-triazole	29	Famphos [®] : O-(dimethylsulfamoyl)phenyl O,O-dimethyl phosphorothioate
	ENT 27822: 9,9-dimethyl N-acetyl phosphaimidicotate	27	Fangair: O-(2-(dimethylsulfamoyl)phenyl O,O-dimethyl phosphorothioate
59	ENT 27967: 1,5-di-(2,4-dimethylphenyl)-3-methyl-1,3,5-triazepentane-4-dione	126	Fentrothion: O,O-dimethyl O-(4-nitro-m-tolyl) phosphorothioate
258	EP-316: 3-methyl-5-isopropoxyphenyl-N-sec-butylcarbamate	396	Fenoflurazole: 5,6-dichloro-1-phenoxycarbonyl-2-trifluoro-methylbenzimidazole
57	EP-332: 3-(2-(dimethylaminophenoxy)methyl)benzyl methylene carbamate, hydrochloride	192	Fenoprop: 2-(2,4,5-trichlorophenoxy)propionic acid
144	EP-333: N'-(4-chlorophenoxy)-N-methylbenzylmethylenecarbamate, hydrochloride	21	Fentofos: 5,6-dichloro-1-phenoxycarbonyl-2-trifluoro-methylbenzimidazole
315	EP-334-HCL: mixture of compounds EP-332 G 30% and EP-333 G 60%	18	Fensulfotetra: O,O-didethyl O-(4-(methylsulfamyl)phenyl)phenyl phosphorothioate
164	EP-334-HCL: experimental mixture of fermetate and chloridemform	364	Fenthion: O,O-dimethyl O-[4-(methylthio)-m-tolyl]phosphorothioate
167	EP-417: experimental mixture of fermetate and chloridemform	221	Fenthion hydroxide: triphenyl tin hydroxide
168	EP-418: experimental mixture of fermetate and chloridemform	221	Ferbam: ferric dimethyl dithiocarbamate
331	EP-432: methyl E-hydroxycarbamate E-methyl-carbanilate	221	Fermate [®] : ferric dimethyl dithiocarbamate
315	EP-475: ethyl E-hydroxycarbamate E-methyl-carbanilate (ester)	180	4AT: Sym-dichlorotetrachloroacetone
10	EPN: O-ethyl O-(2-nitrophenyl)phenylphosphonothioate	316	FLIX [®] -HDO: mineral oil, 99%
19	ENT 300: O-ethyl O-(2-nitrophenyl)phenylphosphonothioate	167	Fluconethyl: 2-fluoroethyl (4-biphenyl) acetate
227	Eptac [®] : 3-ethyl 1,S,N-dipropanylthiocarbonate	371	Fluconuron: 1,1-dimethyl 1,3-(2,5-acetyluro-m-tolyl)urea
227	EPTC: S-ethyl 1,S,N-dipropanylthiocarbonate	352	Fluorodifen: p-nitrophenyl a,b,a-trifluoromethyl-dihenyl ether
73	ER-6624: N/A	334	Folcide: cis-N-[1,1,2,2-tetrachloroethyl]thio]-4-cyclohexene-1,2-dicarbonitrile
183	Erdex [®] : 2,3-quinoxalinedithiol cyclic trithiocarbonate	226	Folox [®] : tributyl phosphorotrifluoride
251	Erbon: 2-(2,4,5-trichlorophenoxy)ethyl-2,2-diehloropropionate	27	Folition [®] : O,O-dimethyl O-(4-nitro-m-tolyl) phosphorothioate
325	Espeol 300: naphtha ("petroleum mineral spirits"; petroleum benzini; petroleum ether)	223	Folpet: N-(trichloromethylthio)phthalimide
225	Etherphos: 2-chloroethyl phosphonic acid		
151	Ethifent: O,O,O-triethyl S,S-methylene bis phosphordithioate		
225	Ethanol [®] : 2-chloroethyl phosphonic acid		
328	Ethyl formate: ethyl formate		
52	Ethyl Gathion [®] : O,O-dimethyl O-(4-oxo-1,2,3-benzotriazine-3-(4H)-y)methyl)phosphorodithioate		

164	Formonate 2-[1-(dimethylamino)methylene]amino)phenyl tritylcarbamate, hydrochloride	224	CC-6768: N,N-di-2-butyl-p-chlorobenzene sulfonamide
	Fructose MNK: complex acidic potassium aluminum silicate	203	CC-6836: triphenyl tin acetate
338	Frucone: 2-aminobutane	178	CC-8893: triphenyl tin chloride
339	Furane: 1,2-difluoro-3-chloropropene	105	CC-9160: ethyl 1,4,5,5,5,5,5-hexamethoxy-1H-cyclohex-2-ylbenzoate
2+1	Fural: N-(2-chloro-5-tolyl)-N,N-diethyl-formamide	163	2-hydroxy-1,3,4-methano-1H-cyclohex-2-ylpentalene-2-lactinate
245	Furanan: 2,3-dihydro-2,2-dimethyl-7-benzofuranyl methyl carbamate	112	CC-9432: Sym-dichlorotetrafluoracetone
5	Furanan: 2,3-dihydro-2,2-dimethyl-7-benzofuranyl methyl carbamate	122	CC-9879: alpha (dithoxypyrophosphinothioylthio) gamma butyrolactone
17	FURCOS: isocoronopy G-chlorocarbamate	107	CC-10101: alpha-(dithoxypyrophosphinothioyl-gamma butyrolactone)
224	FURCOS: isocoronopy G-chlorocarbamate	107	CC-10284: N/A
184	FW-229: 1,1-bis(chlorophenyl) 2,2-trifluoroethanol	354	CC-10379: N/A
189	FW-925: 2,4-dichlorophenyl 2-methoxyether	171	CC-10435: 2,6-dihydroxy-2,6-difluoromethyl-1,1,1,7,7,7-hexamethoxy-4-methyl hept-3-ene-disodium salt hydrate
95	G-23330: 6-methyl-1-2-propyl-4-pyrimidinyl dimethyl carbamate	199	CCISY-338: ethyl 6,4'-dichlorobenzilate
22	G-23611: 1-isopropyl-3-methyl-5-pyrazolyl dimethyl carbamate	230	Glydian: 2-heptadecyl-2-imidazoline acetate
169	G-23932: ethyl 4,4'-dichlorobenzilate	230	Glyoxide: 2-heptadecyl-2-imidazoline acetate
279	G-24163: Isopropyl 4,4'-dichlorobenzilate	280	Glytac: ethylene glycol bis (trichloroacetate)
24	G-24400: Ω,Ω-dimethyl Ω-(2-isopropylyl-6-methyl-4-pyridinyl) phosphorothioate	103	GS-01228: N/A
337	G-30327: 2-phenoxy-4-ethylamino-6-(2-propylamino)-S-triazone	37	GS-12668: Ω,Ω-dimethyl phosphorodithioate Ester with 2-ethoxy-4-(carboxymethyl) 1-O-1,3,4-thiodiazolin-5-one
96	G-30424: Ω,Ω-dimethyl S-2,5-dichlorophenylmercaptomethyl phosphorodithioate	9	GS-13005: Ω,Ω-dimethyl S-(2methoxy 1,3,4-thiodiazol-5-(4R)- enyl)-4-methyl phosphorodithioate
27	G-31461: 2,4-bis(isopropylamino)-6-methylureido-S-triazone	123	GS-13332: 2-dimethylcarbamoyl-3-methyl-5-pyrazolyl dimethyl carbamate
333	Galecon: H-(4-chloro-2-tolyl)-N,N-dimethyl-formamide	281	GS-13798: 8-(2-methyl-1-quinuclidinyl)-N-methyl-S-triazine
345	Gardenia: 2-chloro-1-(2,4,5-trichlorophenyl)vinyl dimethyl phosphate	338	GS-14254: 2-methoxybutylamino-4-ethylamino-6-methoxy-S-triazine
63	GC-1183: dodechlorooctahydro-1,3,3-propano-2H-cyclobutaf[cd] pentalene	385	GS-14260: 2-(tert-butylamino-4-ethylamino-2-methylthio- 1,3,5-triazine
192	GC-928: 2-chlorophenyl benzenesulfonate	384	GS-16068: 2-ethylthio-4,6-disopropylamino-S-triazine
128	GC-1183: dodechlorooctahydro-1,3,3-propano-2H-cyclobutaf[cd] pentalene	261	GS-19851: isopropyl 4,4'-dibromo benzilate
263	GC-2155: 1,2,3,4,6,7,7-heptachloro-bicyclo-(2,2,1) heptene phosphate	336	GS-36162: 2-ethylamino-4-isopropylamino-6-methylthio-S-triazine
264	GC-2131: 2,4-Diehtoxy phosphoric acid ester of 1-chloro-2,4- dithiophenol	31	Cuthion: Ω,Ω-dimethyl-2-4-ethoxy-1,2,3-benzotetrazin-3(4H)- ylmethyl phosphorodithioate
170	GC-3382: diethyl 1-(2,5-dichlorophenyl)-2,2-dichlorovinyl phosphate	304	HCPD: hexachlorocyclooctatetraene
129	GC-3383: 2,5-dichloro-5-chloromethylene) benzyl diethyl phosphate	98	HCS-3260: octachloro-4,7-methanotetrahydroindane, α and γ chlorane (>97%)
47	GC-3-07: dimethyl 3-hydroxyglutamate, dimethyl Phosphate	293	Heliotris virus: Polyhedra virus for <u>Nicotinis</u> sp.
7	GC-6506: dimethyl 2-(methylthio) phenyl phosphate		

35	heptachlor: 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-6,7-methanoindane	271	Indopac® Polybutene H-300: polybutene
35	Heptachlor®: 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindane	105	Iodofenphos: $\text{O}_2\text{-dimethyl-1-O-(2,5-dichloro-4-iodophenoxy)}$ thiophosphate
339	Uerba®: 3-(5-(3a,4,5,6,7,7a-hexahydro-4,7-methanofindanyl))-1,1-dimethyureas	154	IPC: 1-isopropyl carbamate
326	Hertox®: nephtha ("petroleum mineral spirits"; petroleum benzene; petroleum ether)	300	IPC & PP&P-124-3 411: 1-isopropyl-N-(3-chlorophenoxy)carbamate.
152	Hercules 6C-528: 2,3-p-dioxanedithiol S,S-bis-(O,O-dicetyl phosphorodithionate)	32	4 parts + 2-chlorophenyl N-methyl carbamate, 1 part Isodrin: 1,2,3,4,10,10-hexamethoxy-1,4,4a,5,8,8-hexamethoxy-1,6-endocyclic-5,8-dimethanophthalene
84	Hercules 3995 G: 2,2-bis(ethylthio) vinyl dicetyl phosphate	125	Iasolan®: 1-isopropyl-3-methyl-5-pyrrolinyl dimethylcarbamate
50	Hercules 3777: 3-isopropylphenyl N-methylcarbamate	69	Isopropyl parathion: $\text{O}_2\text{-isopropyl-1-O-p-nitrophenyl thiono-phosphate}$
75	Hercules 9007: $\text{H-}(\text{isopropylphenyl})\text{N-}\text{Cl-chloroacetyl-1-N-methyl-carbamate}$	356	Iso-Sectol: $\text{O}_2\text{-Methyl-2-(ethylmercapto) ethyl phosphorus thiolate}$
376	Hercules 9573: 2,6-di-kort-buryl-p-polyimethylcarbamate	157	K-6451: $\text{P-}(\text{chlorophenyl})\text{2-chloro-benzensulfonate}$
48	Hercules 11362: $\text{O}_2\text{-dimethyl-1-S-(1-acetylimidobutylyl)}$ phosphorodithioate	184	Karathane®: 2,4-dinitro-6-octyl-4-phenyl crotonate, 2,6-dinitro-4-octyl-4-phenyl crotonate, and nitrocyt 4-phenyl-4-dinitro-
158	Hercules 14503: $\text{S-}(2\text{-chloro-1-phthalimidooethyl})\text{O}_2\text{-dimethyl phosphorodithioate}$	370	Karbutilate: $\text{N-(3,3-dimethylureido)phenyl-tert-butyl carbamate}$
40	Hercules 17413: $\text{O}_2\text{-dimethyl-1-S-(1-methyl-1,2,4-imidazolidine-dione-3-y) methyl phosphorothioate}$	359	Karmex®: 3-(3,4-dichlorophenyl)-1,1-dimethylurea
29	Hercules 18126: $\text{O}_2\text{-dimethyl-1-S-(1-methyl-1,2,4-imidazolidinedione-3-y) methyl phosphorothioate}$	347	Kelthane®: 1,1-bis(chlorophenyl)-2,2,2-trichloroethanol
195	HGS-2310 2333: hydrated silicon dioxide, synthetic precipitated trioxide	366	Kemate®: 2,4-dichloro-6-(O-chloronitro) 2-triazine
11	HGS-29920: 1-phenyl-2-(O,O-dimethyl-chitosophenoxy)-1,2,4-triazone	120	Kepone®: decachlorooctahydro-1,3,4-methane-2H-cyclobut[cd]cyclopenta[2-ene]
135	HGS-1442: 3,5-dilisopropylphenyl methylcarbamate	338	Kerb®: 3,5-dichloro-N-(1,1-dimethyl-1-2-propynyl)benzamide
377	Hyvar®X: 5'-bromo-3-sec-butyl-6-methyluracil	147	Korlon®: $\text{O}_2\text{-dimethyl-1-(methylcarbamoyloxy) thiobaceturate}$
79	I-1642: S-methyl-1-N-(carbamoylacyl)thiouacetimidate	70	Lannate®: S-methyl-N-[methylcarbamoyloxy] thiobaceturate
385	Igrad®: 2-tert-butylamino-4-ethyl-amino-2-methylthio-1,3,5-triazine	313	Lasso®: 2-chloro-2',6'-diethyl-N-(ethoxycarbonyl)-acetanilide
55	Imidar®: N-(carbamoylmethyl) phthalimide S-O-dimethyl phosphorodithioate	62	Leptecide: $\text{O-(2,5-dichloro-4-bromophenoxy)2-methyl-phenylthio-phosphate}$
70	IN-1179: S-methyl-N-(carbamoylacyl)thiouacetimidate	38	Lindane: 1,2,3,4,5,6-hexamethylcyclohexane, 99% pure gamma isomer
137	IN-1610: S-methyl 1-(dimethylcarbamoyl)-3-[tertylecarbamoyl]-oxy]thioucarbamidate	350	Linuron: 3-(3,4-dichlorophenoxy)-1-methoxy-1-methylurea
		350	Loxon®: 3-(3,4-dichlorophenoxy)-1-methoxy-1-methylurea

Footnote: * A mixture of 1-methylheptyl, 1-octylhexyl, and 1-propylpentyl isomers

126	Lovcen [®] : S-(6-dichloro-1-phenoxycarbonyl)-2-trifluoromethylbenzimidazole	219	methyl chlorobenzilate: methyl 1,4,4'-dichlorobenzoate
147	H-2060 [®] : 2-fluoroethyl (4-phenyl) acetate	26	Methyl Durban: $\text{O}_2\text{-dimethyl S-(3,5,6-trichloro-2-pyridyl)}$ phosphorothioate
160	H-3180: tricyclohexylhydroxytin	51	Methyl Iss-Systox: $\text{O}_2\text{-dimethyl S-(2-[(ethylthio)ethyl]phosphorothioate}$
46	malathion: diethyl malonotosuccinate, S-ester with $\text{O}_2\text{-dimethyl phosphorodithioate}$	14	methyl parathion: $\text{O}_2\text{-dimethyl O-2-nitrophenyl phosphorothioate}$
303	Maloxan [®] : 3-(4-bromo-3-chlorophenyl)-1-methoxy-1-methylurea	67	Methyl Trithon [®] : $\text{S-(2-chlorophenylthio)methyl O-2-dimethyl phosphorodithioate}$
349	maneb: manganese ethylene-1,2-bis(dithiocarbamate)	23	metabromuron: 3-(2-bromoethyl)-1-methoxy-1-methyl urea [*]
236	Mannate [®] : manganese ethylene-1,2-bis(dithiocarbamate)	19	mevinphos: 2-methoxycarbonyl-1-methylinvinyl dimethyl phosphate
154	Marilate [®] : 1,1,1-trichloro-2,2-bis[(p-methoxyphenol)]ethane	303	maxicarbate: 4-dimethylamino-3,5-xylyl-N-methylcarbamate
58	Menthol: 4-dimethylamino- α -tolyl methylcarbamate	360	MH-30 [®] : 1,2-dihydropridazine-3,6-dione
311	H-6 B 9057: methyl 4-amino-2-methylbenzeneculfonyl carbamate	67	Milogard [®] : 2-chloro-4,6-dis(isopropylamino)- α -triazine
317	HOC _n sodium chlorate (30%) + sodium metaborate tetrahydrate (65%)	128	mixtex: dodecachlorotetrahydro-1,3,3metheno-2H-cyclobutan[cd]pentene
39	NC-A-600: 4-phenothiazinyl N-methyl-carbamate	256	Nitro [®] : 2-chlorobenzyl 2-chlorophenyl sulfide
273	NCBA: 4-chloro-2-methylphenyl acetic acid	114	NSPA: N-methyl- $\text{N}-(1\text{-methyl})$ monofluoracetamide (also 2-fluoro-N-methyl- N -1-naphthylacetonide)
386	NCPB: 4-(2-methyl-4-chlorophenoxy) butyric acid	30	Nabum [®] : 4-benzothienyl N-methyl-L-carbamate
256	NCPE: 2-(4-chloro-2-methylphenyl) propionic acid	193	molasses: feed grade molasses
256	2-MCPR: 2-(4-chloro-2-methylphenyl) propionic acid	290	monate: S-ethyl hexahydro-1H-azepine-1-carbothioate
256	macrop: 2-(4-chloro-2-methylphenyl) propionic acid	63	monocrotophos: diethyl phosphate, ester with cis-3-hydroxy-N-methylcrotonamide (analogue of Bidrin [®])
140	mcration: $\text{S-(4,6-dimino-2-methylphenyl) methyl O-2-dimethyl phosphorodithioate}$	20	monuron: 3-(2-chlorophenyl)-1,1-dimethylurea
379	Merpan [®] : $\text{S-(2-N-(trichloromethyl)ethyl)-4-cyclohexene-1,2-dicarboximide}$	182	Morestan [®] : 6-methyl-2,3-quinuclidinol cyclic S_2S -dithiocarbonate
226	merphos: tributyl phosphorotrichloroate	173	Motecide [®] : 2-sec-butyl-4,6-dinitrophenyl 3-methyl-2-butenoate
25	Nestrol [®] : 4-(methylthio)3,5-xylyl methylcarbamate	141	MSNA: monosodium acid methanesulfonate
96	Nera-Systox R [®] : $\text{S-2-(ethylsulfonyl)ethyl O-2-dimethyl phosphorothioate}$	192	Marveaco [®] : $\text{P-chlorophenyl benzeneulfonate}$
306	metham: sodium N-methylthiocarbamate	268	Nylon [®] : tetracydro-3,5-dimethyl-2H-thiadiazine-2-thione
380	methar: disodium methanesulfonate	267	Mytral [®] : 2-Fluoroethyl (4-biphenyl) acetate
167	methanolder: 2-(3,4-dichlorophenyl)-4-oxadiazolidine-3,5-dione	147	N-4543: $\text{O-isopropyl S-(phthalimidomethyl)ethyl-phosphorus-dithioate}$
9	methidation: $\text{O}_2\text{-dimethyl S-(2-methoxy 1,3,4-thiodiazol-5-(4H)-oxyl-4-methyl) phosphordithioate}$	89	nabam: disodium ethylenbis(dithiocarbamate)
70	methoxy: $\text{S-methyl-N-(methylcarbamoyl)oxy} 1\text{thionacetimidate}$	229	naled: 1,2-dibromo-2,2-dichloroethyl dimethyl phosphate
154	methoxychlor: 1,1,1-trichloro-2,2-bis(p-methoxyphenyl)ethane	33	

343	naphthalene: N-1-naphthyl phthalamic acid, sodium salt	339	norcap: 3-(5-(3a,4,5,6,7,7a-hexahydro-4,7-methanoindanyl))-1,1-dimethylauran
326	naphthalene: naphtha ("petroleum mineral spirits"; petroleum benzene, petroleum ether)	251	Noven [®] : 2-(2,4,5-trichlorophenoxy) ethyl-2,2-dichloro- propionate
327	NOTCA (Unubized): trichloroacetic acid, sodium salt	343	NEA: N-1-naphthyl phthalamic acid, sodium salt
126	NC-5016: 5,6-dichloro-1-phenoxycarbonyl-2-trifluoromethyl-N=benzimidazole	149	NPD: 0,0,0,0-tetra- α -propyldithiopyrophosphate
77	Nematec [®] : ethyl 4-(methylthio)-2-tolyl isopropylphosphonate	70	Rudrin [®] : S-methyl-N-[(methylcarbamoyloxy)] thiocarbimidate olancha clay: mineral, silicate, clay
	date	392	Onite [®] : 2-(p-tert-butylphenoxyl) cyclohexyl propyleulfite
341	Nomogen [®] : 1,2-dihromo-3-chloropropane	255	ONS-33: 2-isopropoxyphenyl methylcarbamate
2	Nomaphos [®] : 2,2-diethyl-D-2-pyrazinyl phosphorothioate	62	Ordran [®] : 2-ethyl hexyldio- α -azepane-1-carbothioate
239	NIA-5038: a complex of 2 valles of copper diethyl phosphorodithioate with 1 molecule of bis(dialkoxypyrophosphotrichloro)bisulfide wherein the alkyl groups are an equimolar mixture of ethyl and isopropyl	290	Orthene [®] : 0,0-dimethyl-N-acetyl-phosphormidothione
	NIA-3767: 2-(5-methoxy-4-pyran-2-ylmethyl) 0,0-dimethyl phosphorothioate	59	Ortho 5351: 3:1 mixture of m-(1-methylbutyl) phenyl methylcarbamate and γ -(1-ethylpropenyl) phenyl methylcarbamate
131	NIA-5044: 2-sec-butyl-4,6-dinitrophenyl 3-methyl-2-butenoate	90	Ortho-1175: 0,0-dimethyl N-methyl-1-N-(phenylthio) carbamate
141	NIA-10242: 2,3-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate	379	Orthocide [®] 400: cis-N-[(trichloromethyl)thio]4-cyclohexene-1,2-dicarbonimidate
5	NIA-10559: 4 chloro-2,3-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate	23	OS-2066: 2-methoxycarbonyl-1-methylvinyl dimethyl phosphonate
23	NIA-10586: 2,3-dihydro-2,2,4-trimethyl-7-benzofuranyl methylcarbamate	356	Ovatran [®] : 2-chlorophenyl 2-chloro-benzensulfonate
28	NIA-10637: ethyl hydrogen-1-propylphosphonate	356	ovex [®] : 2-chlorophenyl 2-chloro-benzensulfonate
373	NIA-10656: 1-propylphosphonic acid	260	oxadiazon: 2-tertiobutyl-1-(4-(2,4-dichloro-5-isopropyl-oxyphenyl)-2-oxo-1,3,4-methadiazoline
288	NIA-11092: 2-(3,3,3-dimethylbutylidolophenyl-tert-butyl carbamate	125	oxy-2168: 0,0-isopropyl-O,p-tetraphenyl-thiophosphate
370	NIA-11637: 3,4-dihydro-2,2-dimethyl-[2H]-benzopyranyl-3-methylcarbamate	96	oxydetonator: 2-(2-(ethylsulfanyl)ethyl) 0,0-dimethyl phosphorothionite
41	Nialare [®] : 0,0,0-tertacetyl S,S-methylene bis phosphodithioate	173	oxythiophenox: 6-methyl-2,3-quinoxalinedithiol cyclic
151	nicotine: nicotine 1,3(1-methyl-2-pyrrolidyl)pyridine	17	S,S-dithiocarbonate
211	Nissil [®] : N-methyl-N-(1-naphthyl)benzofluoracetamide	209	Popthon [®] : 0,0-dimethyl S-(n-ethoxycarbonylbenzyl)- phosphordithioate
114	Cafico: 2-fluoro-N-methyl-N-1-naphthylacetamide	6	parquat: 1,1'-dimethyl-4,4'-dipyridylium dichloride
363	nitratin: 4-(methylsulfonyl) 2,6-dinitro-N,N-dipropylamine	208	parathion: 0,0-diethyl O,p-nitrophenyl phosphorothioate
189	nitrofen: 2,4-dichlorophenyl 2-nitrophenyl ether	208	paritol: 2,2-bis(2-chlorophenyl)-3-pyridinemethanol
		229	Paron [®] : 2,2-bis(2-chlorophenyl)-3-pyridinemethanol
			Parzate [®] : disodium ethylene-bis (dithiocarbamate)

352	Paturon [®] : 3-(<i>o</i> -bromophenoxy)-2- <i>l</i> -methylbenzylcarbamate	364	Plasterex [®] : 5,6-dihydro-2-methyl-2,1,4-oxadithiin-3-carboxanilide-6,4-dione; (the dioxide of Vitavac or carbodox)
373	PCA: 5-amino-4-chloro-2-phenyl-3-(1H)-pyridazineone	160	Platrap [®] : tricyclohexylhydroxycin
322	PEP: pentachlorophenol, sodium salt	319	polyisobutylene: polyisobutylene (Type H-35)
287	PEPC: 2-propyl butyltertbutylcarbamate	320	Polyisobutylene: polyisobutylene (Chemogenized)
287	pebulite: 2-propyl butylethylthiocarbamate	191	Polyres [®] : a mixture of [ethylenebis(dithiobenzene)] zinc and [dithiobis(thiocarbonyl)-iminoethylene]bis(dithiocarbamoyl) zinc
322	pentachlorophenol: pentachlorophenol, sodium salt	312	Polyresinate [®] 80: polyisobutylene sorbitan mono-oleate
111	Perthane [®] : 1,1-di-, chloro-2,2-bis(<i>p</i> -ethoxyphenyl)ethane	320	Polytrap [®] : polyisobutylene (Chemogenized)
223	Phalcane [®] : N-tertichloromethyltrio) phenylamide	90	PP-9: 2-acetylphenyl-N-methyl-1- <i>N</i> -(phenylthio) carbamate
391	phenocidaphen: methyl 2-hydroxycarbonimidate 2-methyl-1-carbamate	150	PP-162: 5,6-dimethyl-1-2-dimethylaminoo-4-pyrimidinyl-1-dimethylcarbamate
17	phenocidate: 2,2-dimethyl 2-(<i>o</i> -ethoxycarbonylbenzyl)-1-phosphordithioate	140	PP-175: 2-[4,6-diamino- <i>n</i> -triazin-2-yl)methyl] 2,2-dimethyl phosphordithioate
136	phosfate: 2,2-dimethyl-2-[ethylthio]methyl phosphordithioate	42	PP-211: 2-diethylamino-6-methylpyrimidin-4-yl-dietethyl phosphorothionate
134	phosalone: 2,2-dimethyl 2-(<i>o</i> -chlorobenzoxazone-3-yl-methyl) phosphordithioate	45	PP-511: 2-diethylamino-6-methylpyrimidin-4-yl-dipethyl phosphorothionate
23	Phosdin [®] : 2-methoxycarbonyl-1-methylvinyl dimethylphosphate	172	PPG-124: 2-chlorophenyl N-methyl carbamate
66	phosphamidon: 2-chloro-2,2-dimethylcarbamoyl-1-methyl vinyl-dimethylphosphosphate	278	Prefar [®] : 2-(Q,Q-disopropyl phosphordithioate) of N-(2- <i>o</i> -cresylpropyl) benzeneesulfonamide
82	Phosvert [®] : 2-(2,5-dichloro-4-bromophenyl) 2-methyl phenylthionophosphate	352	Preforan [®] : 2-nitrophenyl 2,2,2-trifluoro-2-nitro-2-ethyl ether.
16	phenylglycyonitrile oxime 2,2-dimethyl phosphorothioate	346	Practol [®] : 2,4'-iminato-4-trifluoromethyl-diphenylether
31	Physcon [®] : 2,3-dichloro-1,4-naphthoquinone	335	Prinsep [®] : 2-chloro-4,6-bis(ethylamino)-5-triazine
	Phytar [®] 138: dimethylserinic acid	367	Probe [®] : 2-(3,4-dichlorophenyl) 4-methyl-1,2,4-oxadiazolidine-3,5-dione
240	picleram: 4-amino-3,5,6-extrahelicofolinic acid	55	Prolate [®] : N-(quarzoformethyl) phthalimide 2,2-dimethyl phosphordithioate
309	piproton [®] : 3-(2-methyl-1-piperidino)propyl 3,4-dichlorobenzoate	57	Proresorb: 3-methyl-1-5-isopropylphenyl-N-methylcarbamate
150	pirimicarb: 5,6-dimethyl-1,2-dimethylamino-4-pyrimidinyl-1-dimethylcarbamate	333	Protryptine: 2,4-bis(isopropylacetanilide)
42	pirimipheno-ethyl: 2,2-dimethylamino-6-methylpyrimidin-4-yl-	190	propanil: 3,4-dichloropropionsulfide
	diethyl phosphorothionate	272	propane: 2-chloro-4,6-bis(isopropylamino)-2-triazine
45	pirimiphos-methyl: 2-diethylamino-6-methyl pyrimidin-4-yl-1-dimethylphosphorothionate	340	propanil: isopropyl carbamate
150	pirimaf [®] : 5,6-dimethyl-1,2-dimethylamino-4-pyrimidinyl-1-dimethylcarbamate	194	propanil: isopropyl carbamate
363	planavik [®] : 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropylaniline		

62	propour: 2-(isopropoxyphenyl) methyl carbamate	63	RE-9006: 0-S-dimethylphosphoramidothioate
95	Pyrone®: 6-methyl-2-propenyl-2-phenyl-4-pyrimidinylidimethyl carbamate	366	RE-315: 3,5-dichloro- Σ -(1,1-dimethyl-2-propenyl)benzamide
373	Pyrone®: 5-amino-4-chloro-2-phenyl-3-(2H)-pyridazinone	379	RE-230: 2-alkyl amine (C_8 - C_{22})
373	pyrazon: 5-amino-4-chloro-2-phenyl-3-(2H)-pyridazinone	185	rhodane®: 1,1-dichloro-2,2-bis(2-chlorophenyl)ethane
204	pyrethrins, synthetic: di-2-allyl-1-hydroxy-3-methyl-1,2-cyclopenten-1-one of mixed cis and trans dl-chrysanthemic acid; also referred to as allyl homolog of Cinerin I.	272	Rogue®: 3,4-dichloropropionanilide
206	pyrethrum: pyrethrum (principally from plant species Chrysanthemum <u>sinense</u> efolium)	291	Ro-Mee®: 3-methylcyclohexylmethyliithiocarbonate
398	Pyrol®: hydrated aluminum silicate	120	ronette: 0,O-dimethyl Σ -(2,4,5-trihlorophenyl)phosphorothionate
398	pyrophyllite: hydrated aluminum silicate	260	Ronstar®: 2-tertialbutyl- Δ -(2,4-dichloro-5-isopropylphenyl)-5-oxo-1,3,5-oxadiazotaine
187	Q-125: 1,1,1-trichloro-2,2-bis(2-ethylphenyl)ethane	207	rotene: 1,2,12,12a-tetrahydro-2-isopropenyl-5,9-dimethoxy[1]benzopyran-[3,4-b]furan[2,3-b][benzopyran-6(6H)One]
111	Q-137: 1,1-dichloro-2,2-bis(2-ethylphenyl)ethane	259	RE-2929: 2-N,N-dimethylaminothiocyanobenzene
110	R-1303: S-(2-chlorophenylthio) methyl 10-O-diethyl phosphordithioate	56	RE-1183: O,O-dimethyl phosphordi thioate 2-ester with 3-(mercaptoethyl)-2-benzoxazolinone
55	R-1504: N-(mercaptomethyl) phthalimide Σ -O,O-dimethyl 1-phosphordithioate	134	RE-1174: O,O-diethyl S-(6-chlorobenzoxazene-3-yl-methyl) phosphordithioate
289	R-1607: S-propyl-N,N-dipropylthiocarbamate	260	RP-1723: 2-tertiobutyl-4-(2,4-dichloro-5-isopropylphenyl)-5-oxo-1,3,4-oxadiazoline
283	R-1910: S-ethyl 1,N,N-ditertiarybutylthiocarbamate	197	ryantia: Ground <u>Rubia</u> <u>speciosa</u> stemwood (alkaloid ryanodine) $C_{25}H_{35}NO_9$ (ryanodine)
287	R-2001: S-propyl butylethylthiocarbamate	391	S-4075: methyl 2-hydroxycarbanilate 0-methyl-carbanilate
291	R-2063: S-ethyl cyclohexylethylthiocarbamate	266	S-5000: 3',4'-dichlorocyclopropane carboxanilide
278	R-4681: S-(O,O-diisopropyl phosphordithioate) of N-(2-mercaptoprop-2-ethyl) benzeneulfonamide	248	S-6173: ammonium (benzenulfonyl) stearate
290	R-4372: S-ethyl hexahydro-1H-azepine-1-carbothioate	143	sabadilla: seeds of <u>Schoenocaulon officinale</u> (veratrine alkaloids)
162	R-23233: ethyl, ethylphthalimidophosphordithioate	384	Sancap®: 2-chlorothio-4,6-bis(isopropylamino)-8-triazine
64	Rabon®: 2-chloro-1-(2,4,5-trichlorophenyl) vinyl dimethyl phosphate	140	Sophos®: S-[4,6-diamino-2-y]methyl-1,3,0-dimethyl phosphordithioate
269	Radipen®: sodium 2,2-dichloropropionic acid	57	Scharling 34615: 3-methyl-5-isopropylphenyl-N-methylcarbamate
190	Ranof®: 2-chloro-N-isopropylacetanilide	15	SD-352: dimethyl iprofonamide
231	Ranox®: 2-oxido-N,N-diallylacetamide	85	SD-4244: α -methylbenzyl-3-(dimethoxy-phosphitylpxyl)-cis-crotonate
90	RE-11: Σ -2- <u>tert</u> -butylphenyl N-methylcarbamate	113	SD-7418: S,S'-biscyclidine bis-(O,O-dimethyl phosphordithioate)
33	RE-4355: 1,2-dibromo-2,2-dichloroethyl dimethyl phosphate	129	SD-8210: 2,5-dichloro- α (chloromethylene) benzyl diethyl phosphate
81	RE-5030: Σ - <u>tert</u> -butylphenyl N-methylcarbamate	72	RE-3353: 3,1 mixture of Σ -(1-methylbutyl) phenyl methyl carbamate and Σ -(1-ethylpropyl) phenyl methyl carbamate
334	RE-3865: cis- Σ -(1,1,2,2-tetrachloroethyl)phenoxy-1,6-cyclohexene-1,2-dicarboxamide	34	0

64	SD-8647: 2-chloro-1-(2,4,5-trichlorophenyl) vinyl dimethyl phosphate.	282	silikil: amorphous silica aerogel (95.5%) + ammonium fluorosilicate (1.5%)
119	SD-8468: 0,0-diethyl 2-chloro-1-(2,4,5-trichlorophenyl)vinyl phosphate	394	silikit (heavy): amorphous silica aerogel (95.5%) + ammonium fluorosilicate (1.5%)
93	SD-9098: 0,0-diethyl 2-[2-chloro-1-(2,4,5-trichlorophenyl)-vinyl]phosphotriacetate	307	silver acid, PCNE ester: 2-(2,4,5-trichlorophenoxy) propionic acid, propyl glycol butyl ether ester
20	SD-9129: diethyl phosphate, ester with cis 3-hydroxy-R-methylterpenamide (analogue of Bidain®)	396	silver acid, tech: 2-(2,4,5-trichlorophenoxy) propionic acid
263	SD-1831: 4-(methylsulfonyl)-2,6-dinitro-N,N-dipropylbenzene	335	simazine: 2-chloro-4,6-dts (tetraamino)-2-triazine
202	SD-14114: distannoxane, hexakis[β -butyl-6-methyluracil]	374	Sinbar®: 3-tetra-butyl-5-chloro-6-methyluracil
375	SD-15418: 2-(4-chloro-6-ethylamino-2-triazen-2'-ylamino)-2-methylpropionitrile	159	Sinox® PE: 4,6-dinitro-o-sec-butylphenol, alkano lactone salt
142	SD-17250: acetic acid, thio-S-(2-cyanoethyl) ester, methylcarbamoyloxime	306	SDDC: sodium-N-methyl dithiocarbamate
331	Sencor®: 4-amino-6-E-butyl-3-(methylthio)-1,2,4-triazin-5-(H)-one	57	SN-315: 3-methyl-5-isopropylphenyl-N-methylcarbamate
275	SES: sodium 2,4-dichlorophenoxyethyl sulfite	315	SN-38107: ethyl N-hydroxycarbamate carbonate (ester)
266	Sesin®: 2,4-dichlorophenoxyethyl benzoate	327	Sodium TCA: trichloroacetic acid, sodium salt
275	Sesone®: sodium 2,4-dichlorophenoxyethyl sulfate	88	SOK®: 6-chloro-5,4-xylyl-methylcarbamate
275	sesone: sodium 2,4-dichlorophenoxyethyl sulfate	272	Stran® F-34: 3,4-dichloropropionate ilide
265	sessin: 2,4-dichlorophenoxyethyl benzoate	198	sulfur: sulfur
78	Sevin®/4 (Sevin + molasses): 1-naphthyl N-methylen carbamate plus feed grade molasses	27	Sumithion®: 0,0-dimethyl 0-(4-nitro- α -tolyl) phosphothioate
60	Sevin®: 1-naphthyl N-methylen carbamate	338	SUNTRON®: 2-sec butylamino-4-ethylamino-6-methoxy-2-triazine
53	Sevin®-4-OX: 1-naphthyl N-methylen carbamate in a non-volatile oil	9	Supratide®: 0,0-dimethyl S-[2-methoxy 1,3,4-thiodiazol-5-(H)-onyl-4-methyl]phosphordithioate
61	Sevin®/80S: 1-naphthyl N-methylen carbamate	283	Sutan®: 2-ethyl-N,N-dimethylthiocarbamate
201	SG-63: colloidal silica, 99.5% SiO ₂ (silica oxide)	201	SYLOID® 63 - Grade 63: colloidal silica, 99.5% SiO ₂ (silica oxide)
33	SG-67: 99.5% silicon dioxide plus ammonium silicofluoride to extent of 3% fluorine	196	SYLOID® 74 - Grade 74: colloidal silica, 99.5% SiO ₂ (silica oxide)
177	SG-68: colloidal silica, 99.7% SiO ₂ (silica oxide)	174	SYLOID® 244 - Grade 68: colloidal silica, 99.7% SiO ₂ (silica oxide)
196	SG-74: colloidal silica, 99.3% SiO ₂ (silica oxide)	177	SYLOID® 255 - Grade 255: 99.5% silicon dioxide plus ammonium silicofluoride to extent:
186	SG-77: silicon dioxide + magnesium fluorosilicate, 99.6% SiO ₂	186	SYLOID® 308 - Grade 308: colloidal silica, 99.6% SiO ₂ + magnesium fluorosilicate, 99.6% SiO ₂
181	SG-78: colloidal silica, 96.6% SiO ₂ (silica oxide)	181	SYLOID® 378 - Grade 378: colloidal silica, 96.6% SiO ₂ (silica oxide)
353	siduron: 1-(2-methylcyclohexyl)-3-phenylurea	91	Systox®: mixture of 0,0-diethyl O-(and S)[2-(ethylthio)ethyl]-phosphochitanates
		276	2,4,5-R: 2,4,5-trichlorophenoxyacetic acid

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DATE: 11-26-80

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216	Tall oil: oleyl-1-moleyl amine	368	Taynor®: 5,10-dihydroxy-5,10-dioxonaphtho-(2,3b)-2-dithine-2,3-dicarbanitrile
63	Tamcor®: O,O-dimethylphosphorimidethioate	287	Tillm®: S-propyl butylethylthiocarbonate
370	Tandex®: S-(3,3-dimethylureido)phenyl-tert-butyl carbamate	189	TK®: 2,4-dichlorophenyl 2-nitrophenyl ether
233	2,3,6-TBA: 2,3,6-trichlorobenzoic acid	248	Toxide®: ammonium (benzonidox) acetate
321	TCA: acids: trichloroacetic acid	158	Toral®: S-(2-chloro-1-phenylmidoethyl)O,O-diethyl phosphoro-dithioate
228	TD-71: N/A	240	Tordon®22K: 4-amino-3,5,6-trichloropicolinic acid
100	TD-72: O,O-diethyl S-[O-ethoxy carbonyl-N-methylcarbamoyl] methyl phenylodithioate	166	Tornphene: chlorinated camphene containing 67-69% chlorine
109	TD-73: N/A	307	TD-4,5-TP: 2-(2,4,5-trichlorophenoxy) propionic acid,
185	TD2: 1,1-dichloro-2,2-bis(2-chlorophenyl)ethane	396	Tetone®: 1,1-dichloropropane (and other related chlorinated hydrocarbons)
381	Tedon®: S-2-chlorophenyl 2,4,5-trichlorophenyl sulfone	344	TPTH: triphenyl tin hydioxide
324	Telone®: 1,1-dichloropropane (and other related chlorinated hydrocarbons)	132	Tranid®: exo-2-chloro-endo-6-cyano-2-norbornane-O-(methyl carbonyl)oxime
182	Telvar®: 3-(2-chlorophenyl)-1,1-dimethylurea	265	Treflan®: 2,2,2-trifluoro-2,6-dinitro-N,N-dipropyl-2-toluidine
13	Tenid®: 2-methyl-2-(methylthio)propionic aldehyde O-(methyl carbamoyl)oxime	358	Trefnid® (trifluralin, 50% + diphenmid, 3.1%): a mixture of: diphenmid 50%, N,N-dimethyl-2,2-diphenylacetamide) and trifluralin 3,17(a,b,g,n-trifluoro-2,6-dinitro-2,6-dipropyl-
355	Tennan®: 3-[2-(p-chlorophenoxy)-phenyl]-1,1-dimethylurea	310	P-collidine)
1	TEPP: tetraethyl propanoate	169	trifluralin: S-(2,3,3-trichloroallyl) diisopropylthiocarbamate
374	teracil: 3-tert-butyl-3-chloro-6-methyluracil	169	trichlorofen: dimethyl (2,2,2-trichloro-1-hydroxyethyl) phosphonate
376	terbutol: 2,6-di-tert-butyl-p-tolylmethylecarbamate	87	trichloronate: O-ethyl O-(2,4,5-trichlorophenyl)ethyl phosphorus thionate
385	terburyne: 2-tert-butylamine-4-ethyl-amin-2-methylthio-1,3,5-triazine	192	TriFenson®: 2-chlorophenyl benzenesulfonate
175	Teron® 75: bis(dimethylthiocarbamoyl) disulfide	265	trifluralin: S,S,a-trifluoro-2,6-dinitro-N,N-dipropyl-2-
381	terradion: S,p'-chlorophenyl 2,4,5-trichlorophenyl sulfone	87	toluidine
167	TH-3671: 2-fluoroethyl (4-biphenyl) acetate	192	trichloron: S-[p-chlorophenyl]methyl 2,6-dinitro-N,N-dipropyl-
136	Thimat®: O,O-diethyl-S-[ethylthiomethyl] phosphordithioate	110	phosphordithioate
130	Thiodan®: 6,7,8,9,10-hexachloro-1,5,5a,6,9a-hydro-5,9-methano-2,4,3-benzo[cl]dioxanthiopiran 3-oxide	237	Triton B-195®: modified phthalic & glycerol alkyl resin
2	Thiomazin: O,O-diethyl O-2-pyrazinyl phosphorothioate	232	Triton X-100®: alkyl phenacyl polyethoxy ethanol
175	thiram: bis(dimethylthiocarbamoyl) disulfide	120	Trotene®: O,O-dimethyl O-(2,4,5-trichlorophenyl) phosphoro-thioate
386	Thistrol®: 4-(2-methyl-4-chlorophenyl) butyric acid	233	Tryshek®: 2,3,6-trichlorobutanoic acid
399	Thuricide®: <i>Encydia thuringiensis</i> Berliner spores and crystalline protein	353	Tupersan®: 1-(2-methylcyclohexyl)-3-phenylurea
175	Thylate®: bis(dimethylthiocarbamoyl) disulfide		

330	Tutane [®] : 2-aminobutane	82	VCS-506: Ω -(2,5-dichloro-4-bromophenyl) Ω -methyl phenyl= chlorophosphate
312	Tween 80 [®] : polyoxyethylene sorbitan mono-oleate	292	Vesidex [®] : 2-chloroallyl-N,N-diethylthiocarbamate
38	U-12927: 6-chloro-3,4-xylyl methylcarbamate	36	Velciol 104 [®] : 1,4,5,6,7,8,8-heptachloro-3a,4,7a-tetra= hydro-4,7-methanoindene
164	U-22415 [®] : benzoyl chloride-4-(2,4,8-trichlorophenyl)hydrazine	202	Vendex [®] Miticide: distannoxane, hexakis (beta,beta-dimethyl= phenethyl)
28	U-36059: 1,5-di-(2,4-dimethylphenyl)-3-methyl-1,3,5-triaze= penta-1,4-diene	283	Vernac [®] : Σ -propyl-N,N-dipropanoylethiocarbamate
186	UC-6812: 9,9'-bisfluorolidene	289	Vermolate: Σ -propyl-N,N-dipropanoylethiocarbamate
24	UC-8305: 2-chloro-2,4-dioxa-5-methyl-2-thiophenyl-3-phosphabicyclo[4.4.0]octane	293	Viroxide [®] : polyhexenyl virus for <u>Brucella</u> spp.
50	UC-10854: 3-isopropylphenyl N-methylcarbamate	369	Vitenvac [®] : 5,6-dihydro-2-methyl-1,4-oxathiolin-3-carboanilide
165	UC-19788: 2-(1-methyl-2-propyl)4,6-dinitrophenyl isopropyl carbamate	305	Vira [®] : sodium N-methylthiocarbamate
132	UC-20047 A: exo-3-chloro-endo-6-cyano-2-norbornanone Ω -(methyl= carbamoyl)oxime	137	Vydene [®] : Σ -methyl 1-(dimethylcarbamoyl)-N-[(methylcarbamoyl)= oxy]heptanumimidate
346	UC-20299: sodium <i>cis</i> -3-chloroacrylate	224	WARE antiresistant for PBT: N,N-di-n-butyl- γ -chlorobenzene sulfonamide
13	UC-21146 [®] : 2-methyl-1,2-(methylthio)propanaldehyde Ω -(methyl= carbamoyl)oxime	273	Weedaf [®] : 4-chloro-2-methoxyphenoxyl acetic acid
292	UC-21426: Σ -methyl Ω [(2-(1-methylheptyl)-4,6-dinitrophenyl)-thiocarbonate	234	Weedazol [®] : 3-amino-1,2,4-triazole
35	UC-21427: lithyl 2,4-dinitro-6-lithiophenyl carbamate	19	Zectran [®] : 4-dimethylamino-3,5-xylyl-N-methylthiocarbamate
117	UC-21704 (hydrochloride form of UC-34096): 4-(N,N-dimethyl= aminomethyleneimino)-3-methylphenyl methylcarbamate hydrochloride	163	Zetulite [®] : zinc dimethylthiocarbamate
49	UC-30045: methyl 2-isopropyl-4-(methylcarbamoyloxy)carbanilate	2	Zinophos [®] : Ω -O-diethyl Ω -2-pyrasinyl phosphothioate
117	UC-34096: 4-(N,N-dimethylaminomethyleneimino)-3-methylphenyl methylcarbamate hydrochloride	163	Ziran: zinc dimethylthiocarbamate
62	Under [®] : Ω -isopropoxyphenyl methylcarbamate	134	Zolene [®] : Ω -O-diethyl Σ -(6-chlorobenzoxalone-3y1-methyl)-phosphordithioate
277	UNI-C940: 2-(tert-butylphenoxyl)-1-ethyllethyl- α -tolyl sulfite		
314	UNI-K840: N/A		
16	Valaxon [®] : phenylglyoxyonitrile oxime Ω -diethyl phosphoro= thionate		
306	Vapan [®] : sodium N-methylthiocarbamate		
34	Vapone [®] : 2,2-dichlorovinyl Ω -O-diethyl phosphate		
367	VCS-638: 2-(3,4-dichlorophenyl)-4-methyl-1,2,4-oxadiazolidine-3,S-dione		

Information on chemical names is primarily from the following references:

Anonymous. 1968. Environmental Protection Agency, Pesticides Regulation Division. Supt. of Documents, Washington, D.C. 20250.

Summary of registered agricultural pesticide chemical uses:

Vol. I. Herbicides, defoliants, desiccants and plant regulators. 3rd Edition, 230 pp.

Vol. II. Fungicides and nematicides. 3rd Edition, 210 pp.

Vol. III. Insecticides, repellents and acaricides. 3rd Edition, 478 pp.

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Frear, D. E. H. 1969. Pesticide Index, 4th Edition, 399 pp. College Science Publishers, State College, Pennsylvania, 16801.

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Meister Pub. Co., Willoughby, Ohio, 44049.

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1713 pp. Merck & Co., Inc. Rahway, New Jersey.

Zehr, E. I. 1971. Fungicides and nematicide tests:
results of 1971. Amer. Phytopathological Society
27: 1-206.

NAME: S. Epps.
DATE: 11-26-80

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2

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- McGallan, S. E. A. 1950. Factors influencing deposition in the vacuum bell jar duster. Boyce Thompson Inst. Contrib. 16(1): 27-37.
- Richards, M. C., and Douglas Murphy. 1949. The vacuum duster for applying fungicides and inoculum to plants. Phytopath. 39: 20.
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D.A. Name & Date - 5-25-85

DATA EVALUATION RECORD

(TDRAJIR)

DATA EVALUATION RECORD

Multiple

PAGE 1 OF 8

CASE 680043 - METHAMIDOPHOS

CHEM 101201

Methamidophos, (O,S-dimethyl phosphorodithioate)

BRANCH EEB DISC 40 TOPIC 05050045

FORMULATION 03 - DUST (D)

FICHE/MASTER ID 00036935 CONTENT CAT II

Atkins, E.L., Graywood, E.A., Macdonald, R.L. (1975) Toxicity of Pesticides and Other Agricultural Chemicals to Honey Bees: Laboratory Studies. By University of California, Dept. of Entomology, ?; UC, Cooperative Extension. (Leaflet 2287; published study.)

SUBST. CLASS = S.

DIRECT RVN TIME * (MH) START-DATE END DATE

REVIEWED BY: Allen W. Vaughan

TITLE: Entomologist

ORG: EEB/HED

LOC/TEL: Crystal Square #4/75641

SIGNATURE: Allen W. Vaughan

DATE: 1-27-82

APPROVED BY:

TITLE:

ORG:

LOC/TEL:

SIGNATURE:

DATE:

B. Steele 5-12-83 *Revised* *Systematic*

DATA EVALUATION RECORD

P. Little 5-12-83 Review System, Inc.

00036935

Materials and Methods

Test Procedures

A bell-jar vacuum duster is used to apply the pesticide, mixed with a pyrolite dust diluent, to the test bees. Dosages of dust are weighed, bees are aspirated into dusting cages and treated, and bees are then transferred into holding cages. Observations are recorded at 12, 24, 48, 72, and 96 hours.

Statistical Analysis

Analysis of the data was performed to enable the authors to determine LD₅₀ values of pesticides from either dosage-mortality curves or from LC₅₀ values. The slope value was also obtained from the dosage-mortality curve.

Discussion/Results

See tables for LD₅₀ values, slope values, and toxicity categories.

Reviewer's Evaluation

A. Test Procedure

Procedures were sound.

B. Statistical Analysis

Analysis as performed by the authors was assumed to be valid. No validation was performed by EEB.

C. Discussion/Results

This study is scientifically sound.

Williams-Ravens 8-30-83

DATA EVALUATION RECORD

Williams-Ravens 8-30-83

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1. CHEMICAL: Multiple chemicals. ~~samples~~
2. FORMULATION: Technical
3. CITATION: Atkins, E.L., E.A. Greywood, and R.L. Macdonald. 1975. Toxicity of pesticides and other agricultural chemicals to honey bees. Laboratory studies. Univ. of Calif., Div. Agric. Sci. Leaflet 2287. 38pp.
FICHE/MASTER ID 00036935
4. REVIEWER: Allen W. Vaughan
Entomologist
EEB/HED
5. DATE REVIEWED: December 3, 1981
6. TEST TYPE: Toxicity to honey bee
 - A. Test Species: Honey bee (*Apis mellifera*)
7. REPORTED RESULTS: Cryolite (#382) was determined to be relatively non-toxic to honey bees in a laboratory acute contact toxicity test. When test bees were exposed to direct treatment at 217.55 micrograms per bee, mortality was 1.45%. For data on other pesticides, see tables.
8. REVIEWER'S CONCLUSIONS: This study is scientifically sound, and shows ~~cryolite~~ to be relatively non-toxic to honey bees.

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DATA EVALUATION RECORD

DeBORAH RAUEN 11-16-83

MULTIPLE
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DATA EVALUATION RECORD

CHEMICAL: Cycloheximide

BRANCH: EEB

FICHE/MASTER ID NUMBER: 60036735

AUTHOR: Atkins, E.L., E.A. Greywood, and R.L. Macdonald. 1975.

TITLE: Toxicity of Pesticides and other agricultural chemicals to honey bees. Laboratory studies. Univ. of Calif., Div. Agric. Sci. Leaflet 2287. 38pp.

DIRECT RVW TIME: 1 hr. START DATE 12-2-81 END DATE 12-2-81

REVIEWED BY: Allen W. Vaughan

TITLE: Entomologist

ORG: EEB/HED

LOC/TEL: Crystal Square #4 75641

SIGNATURE: *Allen W. Vaughan* DATE: 12-2-81

APPROVED BY:

TITLE:

ORG:

LOC/TEL:

SIGNATURE:

DATE:

DeBORAH RAUEN 11-16-83

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1. CHEMICAL: Multiple chemicals. See tables
2. FORMULATION: Technical
3. CITATION: Atkins, E.L., E.A. Graywood, and R.L. Macdonald. 1975. Toxicity of pesticides and other agricultural chemicals to honey bees. Laboratory studies. Univ. of Calif., Div. Agric. Sci. Leaflet 2287. 38pp.
4. REVIEWER: Allen W. Vaughan
Entomologist
EEB/HED
5. DATE REVIEWED: December 2, 1981
6. TEST TYPE: Toxicity to honey bee.
 - A. Test Species: Honey bee (*Apis mellifera*) #397
7. REPORTED RESULTS: Cycloheximide was determined to be relatively non-toxic to honey bees in a laboratory acute contact toxicity test. When test bees were exposed to direct treatment at 241.72 micrograms/bee, there was no mortality. For data on other pesticides, see tables.
8. REVIEWER'S CONCLUSIONS: This study is scientifically sound, and shows cycloheximide to be relatively non-toxic to honey bees.

Deborah Rauen 11-16-83

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Materials and Methods

Test Procedures

A bell-jar vacuum duster is used to apply the pesticide, mixed with a pyrolite dust diluent, to the test bees. Dosages of dust are weighed, bees are aspirated into dusting cages and treated, and bees are then transferred into holding cages. Observations are recorded at 12, 24, 48, 72, and 96 hours.

Statistical Analysis

Analysis of the data was performed to enable the authors to determine LD₅₀ values of pesticides from either dosage-mortality curves or from LC₅₀ values. The slope value was also obtained from the dosage-mortality curve.

Discussion/Results

See tables for LD₅₀ values, slope values, and toxicity categories.

Reviewer's Evaluation

A. Test Procedure

Procedures were sound.

B. Statistical Analysis

Analysis as performed by the authors was assumed to be valid. No validation was performed by EEB.

C. Discussion/Results

This study is scientifically sound.

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by the other factors (0.5, 0.75, 1.25 and 1.5) to obtain the proper range of field dosage in pounds per acre. That, using the slope value closest to the known slope value for the particular pesticide, the anticipated percent mortality will be valid for that chemical.

We wish to emphasize that there are a few exceptions to the above rule of thumb method--those pesticides which are less hazardous as well as more hazardous than one can anticipate from the laboratory data.

It is our desire that, by presenting this data and these methods, decisions can be made to subject a pesticide, determine the dosage and apply the chemical in the safest way and at the most appropriate time to day, maximizing the control of pest species while minimizing the adverse effects upon beneficial species in the treated area.

A list of the LD₅₀ and LC₅₀ values determined at 48 hours after treatment at 80% (26, 30) and 62 percent relative humidity in the laboratory is given for 203 pesticides in table 1. A list of pesticides not toxic in the laboratory are dosage below 11.13 micrograms in given for 196 pesticides in table 2.

Other commonly used nematicide names, primate designations appear together in tables 1 and 2. The pesticide names or other designations appearing in table 1 or 2 are arranged in alphabetical order in table 3 preceded with a numerical reference to their position in table 1 or 2 and giving the chemical definition to

TABLE 1. LD₅₀ and LC₅₀ Values Showing the Comparative Toxicity to Honey Bees in the Laboratory at 48 Hours at 20°C (68.7°F) and 62 Percent Relative Humidity.

Reference No.	Pesticide	LD ₅₀ min μg/bee	Slope Value
Group 1 - Highly Toxic to Honey Bees			
1	Acetochlor	0.001	0.00
2	Chlorotoluron; Clorotoluron; Pencyclophor [®] ; AC-12133; RNT 23180	0.042	0.08
3	Chlorpyrifos; Duraphos [®] ; Sustol [®]	0.114	0.00
4	Dicofol	0.139	0.43
5	Carbofenthion; Parafox [®] ; KKA-10142; RNT 23164	0.180	0.31
6	Parathion	0.173	0.00
7	OC-606	0.178	0.19
8	Dimethoate; Cythion [®] ; DE-1000	0.182	0.00
9	RNT 23150	0.182	0.00
10	Quintozene; Fipronil [®] ; CS-12000; RNT 23197	0.201	0.00
11	TCX; TCX-300	0.243	0.00
12	TCX-750; RNT 23164	0.244	0.30
13	G-1201; RNT 23122	0.243	0.33
14	Aldicarb; Virofix [®] ; RNT 23093	0.282	0.00
15	Methyl Parathion	0.287	0.21
16	Clopyfop; Buctril [®] ; GS-3341; RNT 23143	0.300	16.50

LD₅₀ is the lethal concentration of a chemical giving a bee mortality of 50 percent; LC₅₀ is the lethal dosage in micrograms per bee of a chemical giving 50 percent mortality.

benomyl; Valorem [®] ; Myclobutin [®]	RNT 27446; RNT 27448	0.303	6.83
phenothiazine; CIPD-110 [®] ; Pepticon [®]	RNT 23004; RNT 23184	0.308	4.85
furadan; Baytan [®] ; RNT 23023;	RNT 23340	0.308	3.23
carbendazim; Fungicide 100-2046;			
methidathion		0.309	4.81
monocrotophos; Endrin [®] ; GS-21245;	RNT 23129	0.330	7.77
monocrotophos; Basmit [®] ; RNT-21181;	RNT 24645	0.330	3.48
aldrin		0.333	4.38
heptachlor; Phenothiazine 100-2046;	RNT 22376	0.340	7.98
disulfoton; DIAZOTRON [®] ; GS-21440	RNT 23724	0.372	8.97
monocrotophos; RNT-9215; RNT-23245;	RNT 23726	0.373	3.20
methyl Parathion; RNT 231		0.383	16.23
monocrotophos; Acetochlor; Fipronil [®]			
acetochlor; AC-12133; CP-51717;	RNT 23725	0.387	6.94
RNA-11334		0.406	4.26
Zampro; Zampro [®] ; CL-30123		0.417	4.85
isobutyl; RNT-1-800; RNT 27041		0.423	8.89
isopropomeethyl; Buctril [®] ; RNT-11147		0.433	6.86
Isolan [®] ; GS-13011		0.471	9.75
halod; Bifenthrin [®] ; GS-2333		0.480	18.18

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31.	Aichimere; Vapone ^R ; COT ^R	0.435	2.07		
32.	BAY-9381C; EMT 27633	0.319	22.80		
33.	heptachlor; Valbach ^R ; Herban ^R				
34.	Proline ^R ; R-34	0.336	2.16		
35.	EM-12366	0.330	2.31		
36.	Indane; gamma ² -BZ	0.307	2.07		
37.	Mercuric 18316	0.370	2.40		
38.	Mercuric 17413; EMT 21413	0.361	2.90		
39.	EML-21187	0.369	2.33		
40.	vinimidime-thiobis; R-211	0.314	22.11		
41.	EML-10359	0.354	2.30		
42.	DC-8303	0.328	2.68		
43.	pirimiphos-methyl; R-211	0.339	22.89		
44.	malathion; Cythion ^R	0.799	2.04		
45.	Ampl ^R ; DC-2102	0.743	2.09		
46.	Mercuric 15442; EMT 21403	0.829	2.90		
47.	DC-50043; EMT 22113	0.960	2.02		
48.	Mercuric 5727; DC-10634	0.937	2.34		
49.	Methyl Iso-system	0.937	2.48		
50.	azinphosmethyl; Ethyl Orthene ^R ; BAY-1622P; EMT 22024	0.901	2.32		
51.	Mercuric 5-001	1.02	2.37		
52.	DC-9473; EMT 27364	1.061	2.76		
53.	Indane ^R ; Proline ^R ; R-1504	1.06	2.77		
54.	EM-11763	1.06	2.11		
55.	carbofenth ^R ; promecarb; dehering 24413; R-211; R-215	1.13	2.22		
56.	Mercuric ^R ; BAY-44445; EMT 23784	1.16	2.72		
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Group II - Moderately Toxic to Honey Bees

40.	oefrid ^R ; Compd. 249	2.02	4.30		
41.	DC-5030	2.06	5.38		
42.	Leptophos; Abar ^R ; Phosvel ^R ; PCS-304; EMT 27378	2.12	5.30		
43.	Aciclovir; disoproxil; C-2122	2.21	2.98		
44.	Mercuric 2895 G	2.23	2.84		
45.	Clofacin ^R ; DC-4234; erlotinophos	2.26	17.10		
46.	AC-12009	2.28	2.68		
47.	trichlorfonate; Agritox ^R ; BAY-31281; EMT 23712	2.33	3.36		
48.	Imidacloprid; dicofol; DC-22527; carbamate	2.36	2.91		
49.	DC-4343	2.48	2.76		
50.	Ortho 117751 97-9; DC-11	2.51	4.33		
51.	dimethoate; System ^R ; BAY-2169	2.60	2.85		
52.	DC-43044	2.62	4.35		
53.	AKTO ^R ; DC-9098	2.66	4.07		
54.	DC-30454	2.70	4.06		
55.	Fyramat ^R ; G-21330	2.85	4.07		
56.	methamidophosyl; Meto System ^R ; BAY-21097	3.00	2.32		
57.	G-10015; EMT 27410	3.14	2.70		
58.	chlorfenvinphos; DC-5260	3.18	2.45		
59.	Cyhalothrin; EMT-27470	3.21	2.38		
60.	TCB-93	3.26	4.22		
61.	BAY-30154; EMT 23713	3.63	2.10		
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Group III - Substituted Nonylne to Eassy base			
226	fluorofluor; fluorofluorole; Lewone®;		
	EC-2746; EMT 27438	7.10	3.13
227	NET	7.12	4.43
228	nitra; EC-1223	7.13	3.23
229	EC-2563; EC-4212	7.15	3.07
230	methoxime (ex 9730); 70154ec®	7.16	4.35
231	methoxy; EC-3267; AC-18737	7.18	7.02
232	Trof®; EC-20047A; EMT 22968	7.19	3.27
233	chlorone	7.20	2.34
234	phenoxide; Xelone®; EC-11974	7.21	3.02
235	EC-1432	7.21	3.20
236	phenoxy; Xelone®; AC-2512	7.21	3.34
237	Vydate®; EC-1616	7.22	4.43
238	chloroform; Easone®; EC-2749	7.23	4.03
239			
240	CP-10301	7.24	3.63
241	monomer; Kapton®; 77-173	7.25	4.03
242	bisacryl; Nitro®; EC-9044	7.26	3.97
243	EC-17230	7.28	3.71
244	acetone	7.29	4.20
245	Formonitrile; Ceton®; EC-23121	7.30	
246	EMT 27304	7.31	3.37
247	CP-10316	7.32	3.20
248	methoxime (ex tech.)	7.34	3.34
249	fluorine; Isomar®; Nitro®;	7.35	
250	EC-2640; EC-347-1	7.36	3.60
251	p-aminofluor	7.37	3.02
252	ACTON®; ETV	7.38	3.79
253	acetone; Prolin®; EC-9042	7.39	2.48
254	nitro; Nitro®	7.40	0.93
255	dinitroethane; Deltone®; Eassy base EC-518;	7.41	
256	EMT 22397	7.42	3.03
257	p-aminonitro	7.43	3.01
258	methoxychlor; Merlon®; Mox	7.44	3.57
259	zamide®	7.45	4.00
260	EMT-27731	7.46	3.37
261	dinitro; Karathene®; EMT 27737	7.47	3.87
262	Zonal®; Eassy base 14303; EMT 27312;	7.48	
263	diolifer	7.49	1.30
264	dimethyl; Dimet® PK; Mox37;	7.50	
265	stannous oxide	7.51	4.23
266			
267	acetone; EC-7478	7.52	0.78
268	Erasone®; EMT-30026; chlorotriphenyl	7.53	1.14
269	alkofol; Reithane®; EC-235	7.54	1.52
270	Reithane®; EC-4223	7.55	0.98
271	EC-2102® 308-Grade 74; EC-77	7.56	2.63
272	Q-228	7.57	0.73
273	EMT-26723; EMT 27313	7.58	2.18
274	nitroform; EC-74; EC-913	7.59	3.08
275	propylene; Eassy base EC-31392	7.60	2.81
276	Polymer®, EMT 25711	7.61	1.53
277	formone; Murex®; Trifluoromethyl®;	7.62	
278	EC-9128	7.63	0.07
279	toluene (food grade)	7.64	4.79
280	propylene; Chem-Re®; UPO	7.65	0.81
281	EC-811® 215	7.66	2.47
282	EC-2102® 34-Grade 74; EC-74	7.67	0.98
283	cyanide	7.68	2.24
284	sulfur	7.69	1.35
285	chlorobenzaldehyde; acetoquinone®;	7.70	
286	Gelgy 230; G-22992	7.71	1.03
287	diacetoxycarbonylphenol; Dimic®;	7.72	0.48
288	EC-111; Dimic®	7.73	
289	EC-2102® 63-Grade 63; EC-63	7.74	0.01
290	EM-1412® 100% Teflon® Halar®	7.75	0.57
291	EMT 27304	7.76	
292	EC-4916	7.77	0.63

293	acetone; EC-7478	7.78	0.78
294	toluene (food grade)	7.79	4.79
295	propylene; Chem-Re®; UPO	7.80	0.81
296	EC-811® 215	7.81	2.47
297	EC-2102® 34-Grade 74; EC-74	7.82	0.98
298	cyanide	7.83	2.24
299	sulfur	7.84	1.35
300	chlorobenzaldehyde; acetoquinone®;	7.85	
301	Gelgy 230; G-22992	7.86	1.03
302	diacetoxycarbonylphenol; Dimic®;	7.87	0.48
303	EC-111; Dimic®	7.88	
304	EC-2102® 63-Grade 63; EC-63	7.89	0.01
305	EM-1412® 100% Teflon® Halar®	7.90	0.57
306	EMT 27304	7.91	
307	EC-4916	7.92	0.63

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TABLE 2. Pesticides Not Toxic at 11 Micrograms per Honey Bee
(or higher doses necessary) to the Laboratory at 48 Hours
at 50% (15.7°C) and 65 Percent Relative Humidity.
Group III = Relatively Nonradioactive to Honey Bees.

Reference No.	Pesticide	% Mortality	sp./bee
304	alicyclic; glycidic, synthetic;		
	BET 17310	0.00	0.314
305	Acetochlor®	0.73	0.136
306	pyrethrum	31.00	0.11
307	rotenone; rotenone; derris	12.00	0.42
308	parathion; Parathion®	2.00	0.42
309	parathion	2.74	0.04
310	diclofop; Diclof®	2.04	0.23
311	acetone	3.00	0.70
312	disulfotetra; Disulfotetra®; BET-47333	0.91	0.04
313	Alkaline 21; primary amine; AL-21	2.36	0.06
314	amine 1-15; AL-15	2.36	0.06
315	Alkaline 11; primary amine; AL-11	0	0.06
316	Alkaline 13; primary amine; AL-13; Ball's oil	0	0.06
317	Nopar 221; tertiary amine; AL-221	0	0.06
318	Diclofop 1-15; DL-15	0	0.06
319	methyl chlorobromilate	1.00	0.47
320	Ametek®	26.00	12.00
321	Feban; Fenant®	10.61	12.00
322	Vaged®; A-200	10.61	12.00
323	Safpet; Pheton®	8.97	12.00
324	NOT antiresistant; W.R.F antiresistant		
	Bug 200; BG-4793	2.73	12.00

325	ethoxypropane; Comp. 68-240	7.00	12.00
326	mercapto; Pines®	4.14	12.00
327	mercapto; xrm	5.91	12.00
328		5.95	12.00
329	Cobalt; Cobalt®	5.71	12.00
330	glycidic; glycidic	3.06	12.00
331	imidacloprid; imidacloprid	4.73	12.00
332	trifluralin	4.31	12.00
333	benzene; Trifluralin®; 2,3,6-TBA	4.34	12.00
334	aztreonam; Brodrene®; Oxytetracycline	4.38	12.00
335	copper sulfate	3.52	12.00
336	mannose; Mannose®	3.36	12.00
337	Triton X-199	3.30	12.00
338	dodine; Cypermethrin®	3.42	12.00
339	BTC-006; Comp. 200A; MA-100	2.17	12.00
340	pictolene; Perlon® 20K	7.40	12.00
341	benomyl; Benomyl®	7.10	12.00
342	copper oxychloride sulfate; C-O-C-S	7.00	12.00
343	BAY-31401	6.83	12.00
344	bacitracin; Carbonyl®	5.40	12.00
345	2,4-D (dimethylamino salt); Bacillus thuringiensis; 4-(2,4-DB)	3.87	12.00
346	cypermethrin; Cobalt®; E-4600	2.80	12.00
347	anilox (monovalent salt); Anilox®; chlorimaben	2.60	12.00
348	benomyl; Triadimenol®; E-6173	2.40	12.00
349	triamcinolone; Bromelin®; bromelin®	2.00	12.00
350	2-E	3.33	12.00
351	ether; Sarm®; Novo®	6.00	12.00
352	2,4-D (low volatile oil soluble form); Decamol®	6.44	12.00
353	AC-94336	6.20	12.00
354	chlorotoluidide; Chlortoluidide®; mitoxan®; BET 20494	2.00	12.00
355	Crato®; Crato®; BP-16; BET 37226	3.43	12.00
356	metoprop; METP; METP; 2-NMCY	1.67	12.00
357	D-010 (isomer of Acetochlor®)	0	12.00
358	B-38033; BET 27967	0.00	12.00
359	BP-2122	1.38	12.00
360	imidacloprid; Imidacloprid®; BET-17823	1.38	12.00
361	Acetochlor®; AC-18831; BET 27532	0.30	12.00
362	Mitox®; MEC; chlorotoluidide	4.93	12.00
363	OC-1346	22.47	12.00
364	OC-2121	13.64	12.00
365	trifluralin; Trifluralin®	12.83	12.00
366	benzene; desalin®; 2,4-DB	2.46	12.00
367	Myclose®; Mycose®	6.23	12.00
368	Anast® 170; Decamol®; MA-604	6.17	12.00
369	delphon; Delphon®; Delphon®	4.56	12.00
370	2,4-D (potassium salt)	3.70	12.00
371	Inderol®-Polyketene E-300	3.70	12.00
372	preprod; DPA; Nopar®; Stag® E-34;		
373	BAY 36130	3.68	12.00
374	Wood®; WOOD; Dow MCP under wood killer	3.62	12.00
	perf®	2.99	12.00
375	benzene; Esconol®; MA-2	3.00	12.00
376	2,4,5-T	1.93	12.00
377	C-940; BET-C940	1.82	12.00
378	benomyl; potassium; Potash®; E-4601	1.80	12.00
379	chloropyriproxyfen; Amaranth®; C-24182;		
	BET 25599	3.80	12.00
380	Glycidol®	6.83	12.00
381	ME-1779	0.79	12.00
382	nitrobenzene	0	12.00
383	boronate; Boronate®; E-1910	2.19	12.00
384	ME, 2,2' isomer	14.81	12.00
385	ME, 2,2' isomer	14.43	12.00
386	ME, 2,2' isomer	13.00	12.00
387	phthalate; TEGC; TEGE; E-2001	13.18	12.00
388	MA-10636	11.97	12.00
389	veromictic; Veromictic®; E-1807	18.89	12.00
390	malathion; Ordex®; E-1871	19.32	12.00
391	cyhalothrin; Bio-Bio®; E-2003	7.06	12.00
392	E-21346	6.38	12.00
393	E-21347	5.70	12.00
394	Anastol® 1221	5.50	12.00
395	Anastol® 1244; BET 3072	1.14	12.00
396	Anastol® 1224	1.14	12.00
397	Anastol® 1246	1.10	12.00
398	Anastol® 1232	0	12.00
399	E-21342	11.90	12.00
400	EPC + PPG + 124 + 411	11.90	12.00

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201	Amphibians; Reptiles; Fishes; Crustaceans	4.00	30.00		
202	Amphibians; Reptiles; Fishes; Crustaceans	4.00	30.00		
203	Birds (Invertebrates); Fishes 100	3.75	60.00		
204	Adult; Larvae	2.30	60.00		
205	Young ² ; Juveniles	2.30	60.00		
206	Young ² ; Juveniles	2.30	60.00		
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294	Young ² ; Juveniles	2.30	60.00		
295	Young ² ; Juveniles	2.30	60.00		
296	Young ² ; Juveniles	2.30	60.00		
297	Young ² ; Juveniles	2.30	60.00		
298	Young ² ; Juveniles	2.30	60.00		
299	Young ² ; Juveniles	2.30	60.00		
300	Young ² ; Juveniles	2.30	60.00		
	Young ² ; Juveniles	2.30	60.00	non-taxed @ 75% basis/bot	

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301	chlorophenol; Clorox®; Clorox 2®;			310	Clay 2000®	0.01	\$3.63
302	Clorox 4.2% + 2% Ozone®	0	4.30	311	Clayton®; Tercetol 200®; Haptisol®	0.23	\$2.43
303	Clorox 4.2% + 2% Ozone®	0	4.30	312	Clavia (Lederle); Sodium PCA	0.09	\$2.43
304	Clorox®		3.29	313	Clotily®; Formate	0.19	\$3.63
305	clorox®; chlorine		3.29	314	Clomaz®; ANNE®	0.69	\$3.63
306	clorox®; chlorine		3.29	315	Clotrol®; Turam®	0.23	\$3.63
307	chlorine; bleach; Clorox®		4.30	316	Clotrol®; RAY-54337	0.23	\$3.63
308	chlorine; bleach; Clorox®; CF-15366		4.30	317	Clotrol®; RAY-54338	0.23	\$3.63
309	chlorine; bleach; Clorox®		4.30	318	Clotrol®; Clorox®; C-34181	0.23	\$3.63
310	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	319	Clotrol®; folicol®; Clotrol®; RAY-54363	0.01	\$3.63	
311	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	320	Clotrol®; Zinc®	0.19	\$3.63	
312	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	321	Clotrol®; zinc; Clotrol®	0.19	\$3.63	
313	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	322	Clotrol®; zinc; Clotrol®	0.19	\$3.63	
314	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	323	Clotrol®; zinc; Clotrol®	0.19	\$3.63	
315	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	324	Clotrol®; zinc; Clotrol®	0.19	\$3.63	
316	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	325	Clotrol®; zinc; Clotrol®	0.19	\$3.63	
317	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	326	Clotrol®; zinc; Clotrol®	0.19	\$3.63	
318	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	327	Clotrol®; zinc; Clotrol®; C-34037	0.79	\$3.63	
319	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	328	Clotrol®; zinc; Clotrol®	0.79	\$3.63	
320	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	329	Clotrol®; zinc; Clotrol®	0.79	\$3.63	
321	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	330	Clotrol®; zinc; Clotrol®	0.79	\$3.63	
322	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	331	Clotrol®; zinc; Clotrol®	0.79	\$3.63	
323	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	332	Clotrol®; zinc; Clotrol®	0.79	\$3.63	
324	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	333	Clotrol®; zinc; Clotrol®	0.79	\$3.63	
325	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	334	Clotrol®; zinc; Clotrol®	0.79	\$3.63	
326	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	335	Clotrol®; zinc; Clotrol®	0.79	\$3.63	
327	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	336	chlorinated; aliphatic; amylcetyl ketone®; amylcetyl ketone®			
328	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	337	chlorinated; amylcetyl ketone®; amylcetyl ketone®	0.49	\$3.63	
329	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	338	chlorinated; amylcetyl ketone®; C-34254	0.79	\$3.63	
330	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	339	chlorinated; amylcetyl ketone®	0.79	\$3.63	
331	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	340	chlorinated; amylcetyl ketone®; C-34254	0.79	\$3.63	
332	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	341	chlorinated; amylcetyl ketone®; C-34254	0.79	\$3.63	
333	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	342	chlorinated; amylcetyl ketone®; C-34254	0.79	\$3.63	
334	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	343	chlorinated; amylcetyl ketone®; C-34254	0.79	\$3.63	
335	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	344	chlorinated; amylcetyl ketone®; C-34254	0.79	\$3.63	
336	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	345	chlorinated; amylcetyl ketone®; C-34254	0.79	\$3.63	
337	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	346	chlorinated; amylcetyl ketone®; C-34254	0.79	\$3.63	
338	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	347	chlorinated; amylcetyl ketone®; C-34254	0.79	\$3.63	
339	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	348	chlorinated; amylcetyl ketone®; C-34254	0.79	\$3.63	
340	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	349	chlorinated; amylcetyl ketone®; C-34254	0.79	\$3.63	
341	chlorine; bleach; Clorox®; chlorine acid; PDA®; water	2.19	350	chlorinated; amylcetyl ketone®; C-34254	0.79	\$3.63	

351	metabromine; Paragon®; C-3136	5.39	220.85	372	Bromine; Myler®	1.03	\$33.33
352	metadithione; Paragon®; C-3136	5.40	220.85	373	Alan®	5.89	\$33.43
353	metaboron; Superseal®	5.30	220.85	374	cysteine; Meryc®; Orthocres® 404;		
354	OC-10378	4.58	220.85	375	OC-20208	9.23	\$33.00
355	chloroform; Tavorol®	4.59	220.85	376	methac; DEMA; Anasol® 104	9.23	\$33.00
356	water; Obratol®; E-4431	9.17	220.85	377	tetrabromo; Sodium®	4.33	\$33.00
357	nitrobenzene; Casone®	5.99	220.85	378	oxydite	1.43	\$33.00
358	Trafac® (acrylicure®); 50% + diphenosulfide;			379	Paritol®-T; DAB 551; XTRA	3.13	\$33.00
359	(3,3')	2.79	220.85	380	C-16075; Banco®	6.20	\$33.00
360	ginton; Ginton®	2.72	221.03	381	tributyrin; Sigma®; C-14262	2.90	\$33.43
361	creosol; water; Myler® 104	3.60	221.03	382	Cro-Trot®; thioacet®; MDR (active site)	4.00	\$33.82
362	tafar® (ketone); 50%; 24% + Karathane®; ECA-1439	278.21	221.03	383	vitamin E; thioacet®; MDR (active site)	4.00	\$33.82
363	chlorobenzene; Decalin® 2757; Krovo®	14.25	221.03	384	vitamin E; thioacet®; MDR (active site)	4.00	\$33.82
364	nitroline; Nitroline®; ECA-11831	6.90	221.03	385	vitamin E; thioacet®; MDR (active site)	4.00	\$33.82
365	Elastol®; T-4451	5.90	221.03	386	vitamin E; thioacet®; MDR (active site)	4.00	\$33.82
366	elastol®; Elastol®; DDM®; dicarbonyl;			387	vitamin E; thioacet®; MDR (active site)	4.00	\$33.82
367	Allisite®	5.52	221.03	388	Elastite® NCA	12.13	\$33.82
368	Karo®; SP-315	4.90	221.03	389	calcium carbonate	8.13	\$33.82
369	mercuric; Prox®; ECA-438	2.79	221.03	390	diphenosulfide; Dynac®; Keltol®	7.00	\$33.82
370	elastol®; Nitroline®; DDM®	3.02	221.03	391	phenol; phenol; Neoparol®; ECA-421; ECA-425	2.00	\$33.82
371	nitroline; Nitroline®; C-303;	2.00	221.03	392	clinchite clay	2.03	\$33.82
372	karbollate; Tandol®; XIA-11021	8.50	221.03	393	VIRK®/M®; Belladonna virus	0.23	\$33.82
373	flamestol; Colpol®	3.80	221.03	394	silicic acid (heavy)	0.42	\$33.82
374	bitarac® K-43	3.70	221.03	395	Atmosol®	0.43	\$33.82
375	prostol; Prostol®; PCA	3.35	221.03	396	fungicid; silver nitrate; tech. 3%; 20%; 4%; 7%; 10%	0.41	\$33.82
376	topolin®; Surfac®	2.40	221.03	397	cyclodienes; ACT-2419; Antidine®	0	231.72
377	cyanolene; Nitroline®; C-15418	2.11	221.03	398	propylene; Syntex®	4.23	\$33.82
378	tert-butyl; paraffin; Paraflex 5772	1.66	221.03	399	Emulsion alkylbenzene sulfonates;		
				400	Theodol®; Nitroline®	120-180	

R. Williams-Powell 7-27-81

DATA EVALUATION RECORD

11/11/83-Paren-72786

(TDRD38)

DATA EVALUATION RECORD

PAGE: 1 OF 2

CASE GS0108

CARBOFENOTHION

RM 200 09/16/82

CHEM. 050102

Carbofenthion (S-((p-chlorophenyl))t

BRANCH EEB DISC 40 TOPIC 05050045

FORMULATION 03 = DUST (D)

FICHE/MASTER ID 00036935 CONTENT CAT 11

Atkins, E.L., J Greywood, E.A., Macdonald, R.L. (1975) Toxicity of Pesticides and Other Agricultural Chemicals to Honey Bees; Laboratory Studies, By University of California, Dept. of Entomology, If UC Cooperative Extension, (Leaflet 2287); published study.)

SURST, CLASS = S.

DIRECT RVW TIME = (MH) START-DATE 10/12/83 END DATE 10/12/83

REVIEWED BY: Allen W. Vaughan

TITLE: Entomologist

ORG: EEB/HED

LOC/TEL: Crystal Mall #2 / 557-7600

SIGNATURE: Allen W. Vaughan DATE: 10/24/83

APPROVED BY:

TITLE:

ORG:

LOC/TEL:

SIGNATURE:

DATE:

ALW:10/12/83 Review 7-27-83

2 of 2

1. CHEMICAL: Multiple chemicals. See tables
2. FORMULATION: Technical
3. CITATION: Atkins, E.L., E.A. Greywood, and R.L. Macdonald. 1975. Toxicity of pesticides and other agricultural chemicals to honey bees. Laboratory studies. Univ. of Calif., Div. Agric. Sci. Leaflet 2287. 38 pp.
Fiche/Master ID 00036935
4. REVIEWER: Allen W. Vaughan
Entomologist
EBB/HED
5. DATE REVIEWED: October 12, 1983
6. TEST TYPE: Toxicity to honey bee
 - A. Test Species: Honey bee (Apis mellifera)
7. REPORTED RESULTS: Carbofenothion (#110) was determined to be moderately toxic to honey bees in a laboratory acute contact toxicity test ($LD_{50} = 4.47$ micrograms per bee.) For data on other pesticides, see tables.
8. REVIEWER'S CONCLUSIONS: This study is scientifically sound, and shows carbofenothion to be moderately toxic to honey bees.

Camera C
RAILED SHOT 7-26-84 OPM

DATA EVALUATION RECORD

Caron C
RAVEN SYS. 7-26-84 OPM

(TDR03R)

DATA EVALUATION RECORD

PAGE 1 OF 2

CASE GROUP 43 METHAMIDOPHOS

FM 04/16/81

CHEM. 101201 Methamidophos (O,S-dimethyl phosphoram)

BRANCH EEB DISC 40 TOPIC 05050045

FORMULATION 03 = DUST (D)

FICHE/MASTER ID 00036935 CONTENT CAT II

Atkins, E.L.; Greywood, E.A.; Macdonald, R.L. (1975) Toxicity of Pesticides and Other Agricultural Chemicals to Honey Bees: Laboratory Studies. By University of California Dept. of Entomology. ?; UC, Cooperative Extension. (Leaflet 2287; published study.)

SURST. CLASS = S,

DIRECT RVW TIME = (MH) START-DATE END DATE

REVIEWED BY: Allen W. Vaughan

TITLE: Entomologist

ORG: EEP/HED

LOC/TEL: Crystal Square #4/75641

DATE: 1-27-82

APPROVED BY:

TITLE:

ORG:

LOC/TEL:

SIGNATURE:

DATE:

Coman C
RADEN SYS, 7-25-84 - OPM

1. CHEMICAL: Multiple chemicals. See tables
2. FORMULATION: Technical
3. CITATION: Atkins, E.L., E.A. Greywood, and R.L. Macdonald. 1975. Toxicity of pesticides and other agricultural chemicals to honey bees. Laboratory studies. Univ. of Calif., Div. Agric. Sci. Leaflet 2287. 38pp.
FICHE/MASTER ID 00036935
4. REVIEWER: Allee, W. Vaughan
Entomologist
EEB/HED
5. DATE REVIEWED: January 12, 1982
6. TEST TYPE: Toxicity to honey bee
 - A. Test Species: Honey bee (Apis mellifera)
7. REPORTED RESULTS: Carbaryl (#53, #60, #61) was determined to be highly toxic to honey bees in a laboratory acute contact toxicity test ($LD_{50} < 3.00$ micrograms/bee.) For data on other pesticides, see tables.
8. REVIEWER'S CONCLUSIONS: This study is scientifically sound, and shows Carbaryl to be highly toxic to honey bees.